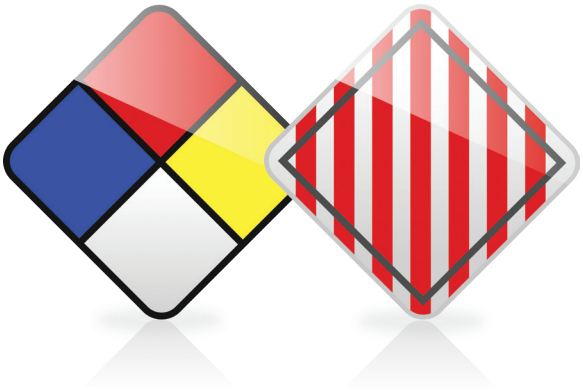


Chemical Resistance Guide

Product Range of GRP Applications

UPR/ Unsaturated Polyester Resins

Polipol 3401 Orthophthalic, low-medium reactivity, unsaturated polyester resin. It is suitable for hand lay-up and spray-up production methods with quick and easy fiber wet out and low volumetric shrinkage.

Polipol 351 High quality orthophthalic based, medium-high reactivity, UPR for GRP parts production. Ideal for hygienic food contact surfaces. It is suitable for hand lamination, spray-up, and pultrusion production methods with its high HDT values and excellent mechanical properties.

Polipol 3872 Isophthalic based, medium-high reactivity, unsaturated polyester resin. Ideal for hygienic food contact surfaces. It is suitable for hand lay-up, spray-up, and pultrusion production methods with its high chemical resistance and hydrolitic stability as well as excellent mechanical properties.

Polipol 3801 Isophthalic based, high reactivity, unsaturated polyester resin which has good chemical resistance and high HDT values.

Polipol 381 Isophthalic acid/NPG based, highly reactive and high molecular weighted unsaturated polyester resin. Ideal for hygienic food contact surfaces. It is both chemical and UV resistant and has excellent mechanical properties as well as good adhesion qualities.

Polipol 391 Bisphenolic based, highly reactive and high molecular weighted unsaturated polyester resin which has very high chemical and thermal resistance as well as special BPA.

VE/ Vinyl Ester Resins

Polives 701 Bisphenol-A epoxy based, medium-high reactivity, low viscosity vinyl ester resin. Ideal for hygienic food contact surfaces. They have hydrolitic stability and provide additional resistance to a wide spectrum of acids, alkalines, bleaches and solvents in many chemical applications.

Polives 711 Bisphenol-A epoxy based, medium-high reactivity vinyl ester resin. It offers hydrolitic stability and provide additional resistance to a wide spectrum of acids, alkalines, bleaches and solvents in many chemical applications. It also offers higher HDT values for high heat resistance applications and excellent mechanical properties.

Polives 710 Halogenated, brominated, fire retardant medium-high reactivity vinyl ester resin that offers a high degree of chemical resistance and toughness. It is a resin used when both chemical resistance and flame retardancy are required.

Polives 721 Epoxy novolac-based vinyl ester resins are designed to provide exceptional thermal and chemical resistance. It offers high resistance from solvents, acids and oxidizing substances (including chlorine). It's high retention of strength and toughness at higher temperatures makes it ideal for flue gas applications.

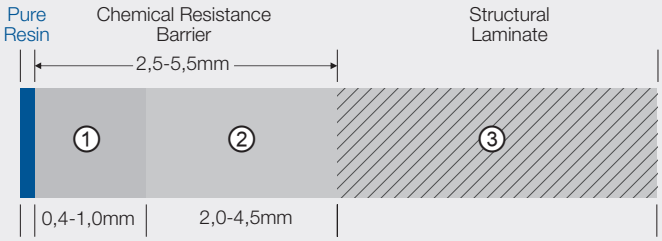
Introduction

Polipol unsaturated polyester resins (UPR) and Polives epoxy vinyl ester resins were carefully designed and produced by Poliya. They present exceptional corrosion-resistant performance and fulfill critical requirements in Glass Reinforced Plastic (GRP) applications.

This Chemical Resistance Guide provides reference information regarding the performance of Polipol and Polives resins under specific chemical environments and temperatures specifically for part designers and engineers of corrosion resistant GRP applications.

The corrosion resistance data set forth in this guide is meant for theoretically ideal designs and correctly manufactured composite GRP parts.

Optimal CRB Design
Chemical Resistance Barrier



When perfectly designed and executed, high caliber GRP parts and structures require a Chemical Resistance Barrier (CRB) thickness of 2,5-5,5 mm which is designed for contact with a specific chemical environment. CRB layers consist of:

① A first layer which is usually between 0,4-1,0mm thick, composed of 90-95% resin, is then reinforced by 1-2 surfacing veils (C-glass or Synthetic Veils).

② The second is a 2,0-4,5mm layer composed of 75% resin which has been reinforced with chopped strand mat (powder binder only).

③ Lastly, the CRB is backed with a structural lamination and is post cured which provides the mechanical rigidity and strength of the overall corrosion-resistant composite structure.

Due to numerous factors that affect the performance of a laminate which are beyond Poliya's control, no warranty regarding the use of Polipol UPR and Polives epoxy vinyl ester resins will be made. The service conditions shown in this guide are within the known capabilities of Polipol unsaturated polyester resins and Polives epoxy vinyl ester resins when laminates are properly designed, fabricated, post cured and installed.

For the optimal designs of GRP equipment, Polives resins' users should refer to the appropriate industry standards and design guidelines. For more information, visit www.poliya.com.

How to Use this Chemical Resistance Guide

Contents

The listing of chemical environments contains the highest known temperature that GRP equipment which has been made with Polipol polyester and/or Polives vinyl ester resins have either displayed good service within industry or, have been tested in the field or in the laboratory with results that indicate model longevity of use.

The given temperatures are not necessarily the maximum service temperature. The temperature data in each column is applicable to the derivative of each of the base resin (e.g., Polives 701 resin applies to 701-TA, 701-T, etc.). In the chemical resistance tables, a dash or blank space simply indicates that no data was available at the time that temperature ratings were assigned.

Some chemical formulas are not represented in the table. You can find these formulas under the Complete Chemical Formulas sections (p.170) where reference codes (e.g. ref F1/R3) show which section the formulas can be found.

Some chemicals have more than one name. In such cases, look for the reference "see chemical x" in the table.

Food Contact

The following resins are safe for the manufacturing of hygienic food contact surfaces and equipment. (see R7).

- Polipol 351
- Polipol 3872
- Polipol 381
- Polives 701
- Polijel 213

Regular Updates

This guide is updated on a regular basis with new data (new products, other temperatures or concentrations, etc.) Please make sure you have the latest version of this guide.

Request Information about Specific Chemical Resistance

To inquire about resin recommendations for corrosion resistant applications, please prepare the following information:

- List the chemical nature of all products along with their corresponding concentrations for a process or a batch. Be sure to include even trace amounts.
- Service temperatures, including maximum and upset temperatures (with corresponding duration).
- State: liquid/gas/solid (and risk of phasing or condensation, if applicable).
- Type of equipment (tank, pipe, lining, etc.).

Annotations

Information given here in the Chemical Resistance Guide Annotations is critical to ensure the longevity of GRP equipment. It is strongly recommended that they are followed.

NR Stands for "not recommended" at any temperature.

LS Stands for "limited service" (at least 3 days to 1 year at room temperature *maximum 40°C). Generally in these cases, the respective resins can be used for GRP that is exposed accidentally, and where cleaning and inspection are possible within 3 days. Usually sufficient for secondary containment.

R1 Inside solubility limits in aqueous solution.

R2 Request Safety Data Sheet from supplier to identify chemical.

R3 Contact Poliya technical support lab for specific recommendations.

R4 Make sure the solvent used in the solution is also suitable.

R5 High purity acids may cause discoloration during first exposures, please contact Poliya for further explanation.

R6 Using above recommended standard design temperature may require approval of the relevant authorities.

R7 For food contact applications, local regulations may apply.

R8 To maximize the service life post cure the GRP.

R9 Preference for Novolac based resins.

R10 For reactors, use Polives 701, 711 or 721 resins.

R11 To increase service life, use a Benzoyl Peroxide/Amine curing system.

R12 Only the highest known service temperature is given. It may be possible to use at higher temperatures.

R13 Can be used up to the maximum stable temperature for product.

R14 Use double synthetic veil in the chemical resistant barrier (CRB).

R15 Use double surfacing veil and a minimum of 5mm chemical resistant barrier (CRB).

R16 Use double C-veil in the chemical resistant barrier (CRB).

R17 Use acid resistant glass in the corrosion liner and structural walls.

R18 Use acid resistant glass in the CRB and structural walls if product will be used above 50°C.

R19 To increase service life, increase chemical resistant barrier (CRB) thickness accordingly.

R20 No condensation or coalescence, fumes.

Post curing

For service temperatures below 100°C: Post curing GRPs can possibly prolong their service life if the operating temperature is within 20°C of the Chemical Resistance Guide maximum temperature for the service. Post curing can also be beneficial for solvent applications with a temperature limit of 25-40°C.

For service temperatures above 100°C: Provided the resin's specific minimum barcol hardness values are reached before start up, post curing during service can possibly be sufficient.

For service in pure and neutral salt solutions: Generally, post curing may not be required, provided no acetone sensibility is shown and the resin's specific minimum barcol hardness values are reached before start up.

When using a BPO/ Amine curing system: Post curing is strongly recommended and should be done within two weeks of construction. The post cure conditions as detailed in DIN 18820 may be used for 701 and 711 at 80°C and for 721 resins at 100°C. Normally, 1 hour per mm thickness of the laminate (between 5 and 15 hours) is recommended.

Veil varieties

In general, both synthetic and glass veils are suitable for most chemical environments. However, Hydrofluoric acid (HF) containing chemical environments require the use of either synthetic or carbon veils. One veil layer will result in a final thickness of approximately 0,2-0,4mm. Both the thickness and the composition of the veil layer are equally important to the stability of the structure. Carbon veils show excellent resistance to many aggressive chemicals such as HF, HCl, NaOH but NOT NaOCl (Sodium Hypochlorite). Carbon veils can also be used to achieve conductive surfaces. An aperture synthetic veil (such as Nexus™ 100-10) offers extra thickness and is preferred to extend the service life of materials exposed to hot caustic solutions.

Special Conditions

Insufficient Information

When no data is available regarding the environment or exposure conditions or said conditions are outside the scope of this guide, a test laminate must be exposed to the actual or simulated conditions proposed before a final decision on resin suitability is made.

Coatings and Linings (reinforced and non-reinforced)

Each coating or lining will have their own specific thermal expansion properties which may limit operating temperatures. Consult with Poliya's technical service department or a company which specializes in lining and coating technologies.

For liquid environments, laminate linings can be more durable than other lining systems. In order to achieve the highest quality results, they should only be applied with hand lay-up and not by spray-up. Generally, if low or missing exotherm is observed during polymerization, that part should be post cured (see also Post curing). The thicker and better curing the lining, the higher the diffusion resistance and prolonged life expectancy can be expected from strongly diffusing environments such as HCl, HF, etc.

Hot Flue Gases

Take care to ensure the temperature resistance of a synthetic veil is sufficient when it is recommended for hot gas environments. Otherwise, a carbon veil should be used. Special measures must be taken to prevent sub-dew point conditions in the laminate if the environment contains water vapor and/or acids.

Intermittent Exposure or Spillage

If exposure is short term and limited to fumes or spills only, it is possible to achieve extended service life at temperatures considerably higher than those discussed and in chemical environments shown as NR (not recommended. Consult with Poliya's technical service department. A test of the actual or simulated conditions proposed is necessary before a final decision on resin suitability is made.

Synergetic Interactions

The information in this guide represents the performance of full GRP structures in contact with the stated chemical environment (unless otherwise indicated) and under continuous use. Certain combinations of chemicals and their reactions toward GRPs can be unpredictable. It is possible for some mixtures to be more aggressive toward GRPs than the individual components. Aggressively synergistic chemicals should receive special attention as their reactions cannot be predicted from the corrosion properties of the individual components. Therefore, chemical resistance may be negatively influenced by using the same equipment for alternating storage or transport of different products, particularly where these products have widely differing properties, such as acids and bases that chemically react with each other.

⚠ Safety Precautions

Using Polipol UPR and Polives VE resins and the auxiliary materials (solvents, accelerators, catalysts, etc.) require extreme safety precautions. The necessary precautions for handling and using unsaturated polyesters are similar and will therefore be familiar to trained personnel. SDS Safety Data Sheets on all Polipol and Polives resins and auxiliary materials are available for customers. Please read these documents in their entirety before use.

⚠ Notice

The information contained herein is subject to change without notice. The information provided on this document are prepared with long term laboratory tests and our own experiences. However, since as a material supplier, Poliya does not exercise any control over the use of Polipol and Polives resins, no legal responsibility is accepted for such recommendations. The information is given with goodwill to act as a guide but not as a reference. Poliya is not responsible for any damages or the user errors which may occur from using this document and/or information.

It is highly recommended that you to conduct tests in your own working condition before using the product on your production line. Poliya shall not be liable for technical or editorial errors or omissions contained here in.

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
A													
Acetaldehyde	-	-	20	-	-	-	-	-	-	-	40	40	40
Acetaldehyde	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Acetic Acid	-	-	0-25	NR	25	35	30	60	85	95	100	100	100
Acetic Acid	-	-	26-50	NR	NR	25	40	60	75	80	80	80	80
Acetic Acid	-	-	51-75	NR	NR	25	35	50	65	65	65	65	65
Acetic Acid	-	-	76-85	-	-	-	-	-	-	-	45	45	45
Acetic Acid (glacial)	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	40
Acetic Acid/ Nitric Acid/ Chromic Acid	-	-	3/5/3	-	-	-	-	-	-	-	65	65	80
Acetic Acid/ Sulfuric Acid	-	-	20/10	-	-	-	-	-	-	-	100	100	100
Acetic Anhydride	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Acetone	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Acetone	-	-	10	NR	20	NR	25	NR	25	NR	-	80	80
Acetone	-	-	20	-	-	-	-	-	-	-	-	-	40
Acetone	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Acetonitrile	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Acetonitrile	-	-	20	-	-	-	-	-	-	-	40	40	40
Acetonitrile	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Acetyl Acetone	-	-	20	-	-	-	-	-	-	-	40	40	50
Acetyl Acetone	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Acid Cleaner	31% Hydrochloric acid	(R8,15,16,17)	31	-	-	-	-	-	-	-	65	65	80(R5)
Acrolein (Acrylaldehyde)	-	-	20	-	-	-	-	-	-	-	40	40	40
Acrolein (Acrylaldehyde)	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Acrylaldehyde (Propenal)	see Acrolein	-	-	-	-	-	-	-	-	-	-	-	-
Acrylamide	-	-	50	-	-	-	-	-	-	-	40	40	40
Acrylic Acid	-	(R12)	25	-	-	-	-	-	-	-	40	40	40
Acrylic Acid	-	-	100	NR	-	NR	-	-	35	NR	NR	NR	LS
Acrylic Latex	-	-	all	-	-	-	-	-	-	-	80	80	80
Acrylonitrile	-	-	7	NR	NR	NR	NR	NR	NR	40	40	40	40
Acrylonitrile	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Acrylonitrile Latex dispersion	-	(R12)	2	-	-	-	-	-	-	-	25	25	25
Activated Carbon Beds	water treatment	-	-	-	-	-	-	-	-	-	80	80	100
Adipic Acid	1,5 g sol. in water at 25°C, soln. hot water	-	23	-	-	-	-	-	-	-	80	80	80
Air (GRP maximum surface temperature)	max. surface temp. of the GRP	(R6)	-	-	-	-	-	-	-	-	180	160	200
Alachlore, Herbicide	-	(R4)	all	-	-	-	-	-	-	-	-	-	40
Alcohol, Amyl	-	-	100	-	-	-	-	-	-	-	50	50	65
Alcohol, Butyl	-	-	100	-	-	-	-	-	-	-	50	50	65
Alcohol, Ethyl	see Ethanol	-	-	-	-	-	-	-	-	-	-	-	-
Alcohol, Isodecyl	-	-	100	-	-	-	-	-	-	-	50	50	80
Alcohol, Propyl	-	-	100	-	-	-	-	-	-	-	40	40	50
Alkaline Cleaner	see Sodium and Potassium Hydroxides	-	-	-	-	-	-	-	-	-	-	-	-
Alkaline Solutions	see Sodium, Potassium and Ammonium hydroxides, carbonates	-	-	-	-	-	-	-	-	-	-	-	-
Alkane Sulfonate	see Sodium Dodecylbenzene Sulfonate	-	-	-	-	-	-	-	-	-	-	-	-
Alkyl (C8-C10) Dimethyl Amine	-	-	100	-	-	-	-	-	-	-	80	80	100
Alkyl (C8-C18) Chloride	-	-	> 0,5	-	-	-	-	-	-	-	80	95	100

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Alkyl Aryl Sulfonic Acid	see Alkyl Benzene Sulfonic Acid	-	-	-	-	-	-	-	-	-	-	-	-
Alkyl Benzene Sulfonic Acid	-	(R3)	> 0,5	-	-	-	-	-	-	-	80	95	100
Alkyl Tolyl Trimethyl Ammonium Chloride	-	-	-	-	-	-	-	-	-	-	40	40	50
Alkyldiphenyloxide Disulfonate	Anionic Surfactant	-	all	-	-	-	-	-	-	-	50	50	50
Allyl Alcohol	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Allyl Chloride	-	-	100	-	-	-	-	-	-	-	25	25	25
Alpha-Methylstyrene	-	-	100	-	-	-	-	-	-	-	25	25	50
Alpha-Oleum Sulfates	-	-	100	-	-	-	-	-	-	-	50	50	50
Alum	-	-	sat'd	-	-	-	-	-	-	-	100	100	120
Alumina Hydrate	-	-	all	-	-	-	-	-	-	-	80	80	80
Aluminum Chloride	-	-	sat'd	40	45	50	70	80	95	100	100	100	120
Aluminum Chlorohydrate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Aluminum Chlorohydrate/ Hydrochloric Acid	-	(R10,16,18)	> 0,5/< 15	-	-	-	-	-	-	-	80	80	100
Aluminum Chlorohydroxide	-	-	50	-	-	-	-	-	-	-	100	100	100
Aluminum Fluoride	-	-	all	-	-	-	-	-	-	-	25	25	25
Aluminum Hydroxide	-	-	100	-	-	-	-	-	-	-	80	80	95
Aluminum Nitrate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Aluminum Potassium Sulfate	-	-	sat'd	-	-	-	-	-	-	-	100	100	120
Aluminum Sulfate	-	-	sat'd	-	-	-	-	-	-	-	100	100	120
Aluminum Sulfate (reactor)	-	(R10)	> 0,5	-	-	-	-	-	-	-	100	100	-
Amine Salts	-	-	all	-	-	-	-	-	-	-	50	50	65
Amine Scrubbing	Scrub. Low Mol. wt. Amines with 10% Sulfuric Acid	-	-	-	-	-	-	-	-	-	-	-	-
Amino Acids	-	-	all	-	-	-	-	-	-	-	40	40	40
Ammonia (aqueous)	see Ammonium Hydroxide	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia (dry gas)	-	-	100	-	-	-	-	-	-	-	40	40	40
Ammonia (liquified gas)	-	-	100	-	-	-	-	-	-	-	NR	NR	NR
Ammonia (wet gas)	-	-	40 vol.%	-	-	-	-	-	-	-	80	80	80
Ammonium Acetate	-	-	> 0,5	-	-	-	-	-	-	-	25	25	40
Ammonium Bicarbonate	-	-	0,5-50	-	-	-	-	-	-	-	70	70	70
Ammonium Bifluoride	-	(R14)	> 0,5	-	-	-	-	-	-	-	65	-	65
Ammonium Bisulfite black liquor	-	-	-	-	-	-	-	-	-	-	80	80	80
Ammonium Bisulfite cooking liquor	-	-	-	-	-	-	-	-	-	-	65	65	65
Ammonium Bromate	-	-	0,5-43	-	-	-	-	-	-	-	70	70	70
Ammonium Bromide	-	-	0,5-43	-	-	-	-	-	-	-	70	70	70
Ammonium Carbonate	-	-	> 0,5	NR	NR	NR	NR	NR	30	65	65	65	65
Ammonium Chloride	-	-	> 0,5	40	45	50	70	80	95	100	100	100	100
Ammonium Citrate	-	-	> 0,5	30	40	45	60	60	60	65	65	65	65
Ammonium Fluoride	-	(R14)	> 0,5	-	-	-	-	-	-	-	65	65	65
Ammonium Hydroxide	-	-	0,5-5	NR	NR	25	NR	35	65	80	80	80	65
Ammonium Hydroxide	-	-	6-20	NR	NR	NR	NR	25	50	60	65	65	40
Ammonium Hydroxide	-	-	61,7 (%30 NH_3)	NR	NR	NR	NR	NR	35	40	40	40	40
Ammonium Hydroxide and Ammonium comp.	NH_4OH/ NH_4Cl/ $(NH_4)_2CO_3$	(R14)	(%30 NH_3)/35/5	-	-	-	-	-	-	-	40	40	-
Ammonium Lauryl Sulfate	-	-	0,5-30	-	-	-	-	-	-	-	50	50	50
Ammonium Ligno Sulfonate	-	-	0,5-50	-	-	-	-	-	-	-	80	80	80
Ammonium Molybdate	-	-	> 0,5	-	-	-	-	-	-	-	65	-	-

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Ammonium Nitrate	-	-	sat'd	30	40	45	65	75	90	90	100	105	120
Ammonium Oxalate	-	-	> 0,5	-	-	-	-	-	-	-	65	-	-
Ammonium Pentaborate	-	-	0,5-12	-	-	-	-	-	-	-	50	-	-
Ammonium Perchlorate	-	-	0,5-15	-	-	-	-	-	-	-	75	-	-
Ammonium Persulfate	-	-	> 0,5	-	-	-	-	-	70	80	100	100	100
Ammonium Phosphate (dibasic)	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Ammonium Phosphate (monobasic)	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Ammonium Polysulfide	-	-	> 0,5	-	-	-	-	-	-	-	50	-	65
Ammonium Propionate	-	-	> 0,5	-	-	-	-	-	-	-	25	25	40
Ammonium Sulfate	-	-	sat'd	40	45	50	70	80	90	100	100	105	120
Ammonium Sulfate/ Ethyl Alcohol/ Ethoxylate	-	-	60/15/3	-	-	-	-	-	-	-	40	40	65
Ammonium Sulfide (Bisulfide)	-	-	sat'd	-	-	-	-	-	-	-	50	-	50
Ammonium Sulfite	-	-	sat'd	-	-	-	-	-	-	-	65	65	65
Ammonium Thiocyanate	-	-	0,5-20	40	45	45	65	75	90	90	100	100	100
Ammonium Thiocyanate	-	-	sat'd	-	-	-	-	-	-	-	50	50	50
Ammonium Thioglycolate	-	-	all	-	-	-	-	-	-	-	40	40	40
Ammonium Thiosulfate	-	-	all	-	-	-	-	-	-	-	60	60	60
Amyl Acetate	-	-	> 0,5	NR	NR	NR	25	NR	25	NR	20	-	50
Amyl Alcohol	-	-	100	-	-	-	-	-	-	-	50	50	65
Amyl Alcohol (vapor)	-	-	100	-	-	-	-	-	-	-	50	50	100
Amyl Chloride	-	-	100	-	-	-	-	-	-	-	50	50	50
Anaerobic Sewage	-	-	-	-	-	45	50	50	50	50	50	50	50
Aniline	-	-	20	-	-	-	-	-	-	-	40	40	40
Aniline	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	20
Aniline Hydrochloride	-	-	> 0,5	-	-	-	-	-	-	-	80	80	80
Aniline Sulfate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Animal Fat	-	(R7)	100	-	-	-	-	-	-	-	80	-	-
Anionic Surfactant	-	-	all	-	-	-	-	-	-	-	40	40	50
Anionic/ Cationic Polymer Emulsions	Emulsion in water with Kerosene or Petroleum Distillates	-	0-50	-	-	-	-	-	-	-	40	-	50
Anodize	(15% Sulfuric acid)	-	-	-	-	-	-	-	-	-	100	100	100
Antimony Pentachloride	see Hydrochlorid Acid for aq. soln.	-	-	-	-	-	-	-	-	-	-	-	-
Aqua Regia	-	(R3)	-	NR	NR	NR	NR	NR	NR	NR	-	-	-
Aromatic Naphtha/ Naphthalene/ Isopropanol	-	-	60/5/10	-	-	-	-	-	-	-	-	-	50
Arsenic Acid	-	-	> 0,5	-	-	-	-	-	-	-	80	80	80
Arsenic Acid/ Copper Sulfate/ Sodium Dichromate	-	-	17/37/20	-	-	-	-	-	-	-	80	80	80
Arsenic Pentoxide/ Copper Oxide/ Chromic Acid	-	-	17/9/24	-	-	-	-	-	-	-	40	40	40
Arsenious Acid	-	-	19°Be	-	-	-	-	-	-	-	80	80	80
B	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium Acetate	-	-	> 0,5	-	-	-	-	-	-	-	80	-	80
Barium Bromide	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Barium Carbonate (slurry)	-	-	all	-	-	-	-	-	-	-	80	80	80
Barium Chloride	-	-	> 0,5	40	50	45	70	80	95	100	100	100	100
Barium Cyanide	-	-	> 0,5	-	-	-	-	-	-	-	65	65	65
Barium Hydroxide	-	-	> 0,5	NR	NR	NR	NR	20	30	65	65	65	65
Barium Sulfate	-	-	sat'd	-	-	-	-	-	-	-	100	100	120

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Barium Sulfide	-	-	> 0,5	-	-	-	-	-	-	-	80	80	80
Barley Solution, Malt	-	(R7)	> 0,5	-	-	-	-	-	-	-	75	-	-
Beer	-	(R7)	> 0,5	-	-	55	-	-	-	50	50	-	-
Benzaldehyde	-	-	100	-	-	-	-	-	-	-	NR	NR	20
Benzalkonium Chloride	-	-	diluted	-	-	-	-	-	-	-	40	-	-
Benzene	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	40
Benzene (vapor)	-	-	vapor	NR	NR	NR	NR	NR	NR	NR	25	NR	50
Benzene 50°C	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Benzene Sulfonic Acid	-	(R3)	> 0,5	-	-	-	-	-	-	-	65	65	65
Benzene/ Ethylbenzene	-	-	33/67	-	-	-	-	-	-	-	NR	NR	40
Benzene/ Methyl Tertiary Butyl Ether	-	-	80/20	-	-	-	-	-	-	-	NR	NR	40
Benzenesulfonyl Chloride	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Benzoic Acid	-	-	sat'd	40	50	50	70	70	95	100	100	100	100
Benzoyl Benzoic Acid	o-Benzoyl Benzoic Acid	-	all	-	-	-	-	-	-	-	100	100	100
Benzyl Alcohol	-	-	20	-	-	-	-	-	-	-	40	40	50
Benzyl Alcohol	-	-	100	NR	25	25	30	NR	25	NR	NR	NR	40
Benzyl Chloride	-	(R8)	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	40
Benzyltrimethylammonium Chloride	-	-	60	-	-	-	-	-	-	-	40	40	40
Black Liquor (pulp mill)	-	(R8,14)	thin	-	-	-	-	-	-	-	80	80	80
Black Liquor recovery, furnace gases	-	(R3,6)	-	-	-	-	-	-	-	-	165	165	205
Black Liquor, thick/ heavy (pulp mill)	-	(R8,14)	thick	-	-	-	-	-	-	-	95	105	105
Blow Down from Pulp Digester	noncondensable gases	(R15)	-	-	-	-	-	-	-	-	120	120	120
Borax	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Boric Acid	-	-	> 0,5	40	50	50	70	80	95	90	100	100	100
Boron Trichloride Scrubbing	-	-	> 0,5	-	-	-	-	-	-	-	65	65	65
Brake Fluids	-	-	100	-	-	-	-	-	-	-	50	50	50(R12)
Brass Plating Bath Solution ref F15	Cu, Zn, NaCN, Na_2CO_3	(R14)	-	-	-	-	-	-	-	-	80	80	80
Brine Mix ref F18	$MgSO_4$, NaCl, Na_2SO_4, K_2SO_4, $CaSO_4$, Na_2SO_3	-	-	-	-	-	-	-	-	-	100	100	100
Brine, Chlorinated	see Chlorinated Brine	-	-	-	-	-	-	-	-	-	-	-	-
Brine, Salt	-	(R7)	sat'd	-	-	-	-	-	-	-	100	110	120
Brine, Salt	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Brominated Phosphate Ester	-	-	> 0,5	-	-	-	-	-	-	-	-	-	50
Bromine (dry gas)	-	-	100	-	-	-	-	-	-	-	40	40	40(R12)
Bromine (liquid)	-	-	100	-	-	-	-	-	-	-	NR	NR	NR
Bromine (wet gas)	-	-	100	-	-	-	-	-	-	-	40	40	40
Bromine in Water	no pure Bromine phase	-	< sat'd	-	-	-	-	-	-	-	-	-	80
Brown Stock	-	-	-	-	-	-	-	-	-	-	95	95	80
BTEX (Monoaromatic hydrocarbon mix)	Benzene/ Ethyl Benzene/ Toluene/ Trimethyl Benzene/ Xylene	-	all	-	-	-	-	-	-	-	NR	NR	40
Bunker C Fuel Oil (heavy fraction)	-	-	100	-	-	-	-	-	-	-	100	100	105
Butadiene (gas)	-	(R8)	100	-	-	-	-	-	-	-	45	45	45
Butane	-	-	100	-	-	-	-	-	-	-	60	60	60
Butanol	-	-	100	-	-	-	-	-	-	-	50	50	65
Butyl Acetate	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	30
Butyl Acrylate	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Butyl Alcohol	-	-	100	-	-	-	-	-	-	-	50	50	65

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Butyl Alcohol/ Benzene	-	-	93/4	-	-	-	-	-	-	-	NR	NR	50
Butyl Amine	n-Butyl Amine	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Butyl Benzoate	n-Butyl Chloride	-	70	-	-	-	-	-	-	-	-	-	40
Butyl Benzyl Phthalate	-	-	100	-	-	-	-	-	-	-	80	80	100
Butyl Chloride	-	-	0,1-100	-	-	-	-	-	-	-	NR	NR	25
Butyl Hypochlorite	-	-	98	-	-	-	-	-	-	-	NR	NR	NR
Butyl Stearate	5% in Mineral Spirits	-	-	-	-	-	-	-	-	-	40	-	-
Butylene Glycol	-	-	100	-	-	-	-	-	-	-	70	70	80
Butylene Oxide	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Butyraldehyde	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Butyric Acid	-	-	0,5-50	-	-	-	-	-	-	-	100	100	100
Butyric Acid	-	-	100	-	-	-	-	-	-	-	25	25	50
C	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium Chloride	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Cadmium Cyanide Plating Bath Soln. ref F9	CdO, NaCN, NaOH	(R14)	-	NR	NR	NR	NR	-	80	80	80	80	80
Calcium Bisulfite	-	-	> 0,5	30	40	45	60	65	80	90	100	100	100
Calcium Bromide	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Calcium Carbonate (lime stone slurry)	-	-	all	-	-	-	-	-	-	-	80	80	80
Calcium Chlorate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Calcium Chloride	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Calcium Chloride	-	-	sat'd	-	-	-	-	-	-	-	100	105	120
Calcium Hydroxide (lime)	-	(R14)	100	NR	20	35	30	45	60	80	100	100	100
Calcium Hydroxide (slurry)	-	(R14)	0,5-25	-	-	-	-	-	-	-	80	80	40
Calcium Hypochlorite	-	(R8,11,13,16)	all	NR	NR	NR	NR	NR	NR	80	80	80	40
Calcium Nitrate	-	-	> 0,5	40	50	50	70	80	95	100	100	100	100
Calcium Sulfate Slurry	-	-	all	40	50	50	70	80	95	95	100	100	100
Calcium Sulfite	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Capric Acid	see Decanoic Acid	(R4)	-	-	-	-	-	-	-	-	-	-	-
Capric Acid/ Lauric Acid/ Fatty Acids	C10-C18	-	70/15/15	-	-	-	-	-	-	-	80	80	95
Caproic Acid	see Hexanoic Acid	-	-	-	-	-	-	-	-	-	-	-	-
Caprolactam	-	-	0-50	-	-	-	-	-	-	-	40	40	40
Caprolactam	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Caprolactone	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Caprylic Acid (Octanoic Acid)	-	-	100	-	-	-	-	-	-	-	80	80	100
Caramel	-	(R7)	all	-	-	-	-	-	-	-	50	-	-
Carbon Dioxide (gas)	-	(R6)	all	40	50	50	70	80	95	65	165	165	205
Carbon Disulfide	-	(R20)	all	-	-	-	-	-	-	-	40	40	65
Carbon Disulfide	-	-	100	NR	NR	NR	NR	NR	NR	90	NR	NR	LS
Carbon Monoxide (gas)	-	(R6)	all	50	75	70	120	80	110	80	165	165	205
Carbon Tetrachloride	-	-	100	20	20	25	30	NR	30	NR	65	65	80
Carbon Tetrachloride (vapor)	-	-	all	-	-	-	-	-	-	-	80	80	95
Carboxyethyl Cellulose	-	-	10	-	-	-	-	-	-	-	65	65	65
Cashew Nut Oil	-	(R7)	100	-	-	-	-	-	-	-	65	-	-
Castor Oil (Ricinus Oil)	-	-	100	50	75	70	110	65	110	NR	70	70	70
Cationic/ Anionic Polymer Emuls.	Emulsion in water with Kerosene or Petroleum Distillates	-	0-50	-	-	-	-	-	-	-	40	-	50

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Caustic	see Sodium Hydroxide	-	-	-	-	-	-	-	-	-	-	-	-
Cetyl alcohol (Hexadecanol)	-	-	100	-	-	-	-	-	-	-	65	65	80
Chlordimeform Insecticide	-	-	100	-	-	-	-	-	-	-	25	25	50
Chloric Acid	-	-	all	-	-	-	-	-	-	-	25	25	25
Chlorinated Brine	pH < 2,5	(R15)	sat'd Cl_2	-	-	-	-	-	-	-	80	80	95
Chlorinated Brine	pH 2.5-9	(R3)	sat'd Cl_2	-	-	-	-	-	-	-	LS	LS	LS
Chlorinated Brine	pH > 9 (Hypochlorite)	(R8,11,16)	sat'd Cl_2	-	-	-	-	-	-	-	80	80	65
Chlorinated Pulp (pulp mill)	-	(R3)	all	-	-	-	-	-	-	-	80	90	95
Chlorinated Solvent Recovery	see Solvent name	-	-	-	-	-	-	-	-	-	-	-	-
Chlorinated Wax	-	-	all	-	-	-	-	-	-	-	80	80	80
Chlorination Washer (hoods and vents)	-	-	all vapor	-	-	-	-	-	-	-	80	80	95
Chlorine (dry gas)	-	(R8,15,19)	100	-	-	-	-	-	-	-	80	80	100
Chlorine (wet gas)	-	(R8,15,19)	100	-	-	-	-	-	-	-	80	80	100
Chlorine Dioxide (Chlorine)	Bleaching solution with or without pulp	(R3)	all	-	-	-	-	-	-	-	80	90	95
Chlorine Dioxide (no Chlorine)	Bleaching solution with or without pulp	(R3)	all	-	-	-	-	-	-	-	80	90	95
Chlorine Dioxide (solution storage)	-	-	sat'd	-	-	-	-	-	-	-	20	20	20
Chlorine Dioxide Generator Effluent	R2 system Chlorine Dioxide generator	-	-	-	-	-	-	-	-	-	65	65	80
Chlorine Dioxide Scrubber	-	(R8,11,14)	-	-	-	-	-	-	-	-	75	75	-
Chlorine Water	see Chlorinated Brine	-	-	-	-	-	-	-	-	-	-	-	-
Chlorine/ Chlorine Dioxide/ Sulfur Dioxide	-	-	0,8/2/0,7	-	-	-	-	-	-	-	95	95	95
Chlorine-Hydrogen Chloride	with aqueous condensate	(R6,15,16,18)	%8-10 HCl	-	-	-	-	-	-	-	80	80	100
Chloroacetic Acid	-	-	0-25	-	-	-	-	-	-	-	50	50	50
Chloroacetic Acid	-	-	26-50	-	-	-	-	-	-	-	40	40	40
Chloroacetic Acid	-	-	51-79	-	-	-	-	-	-	-	25	25	30
Chloroacetic Acid	-	-	80-85	-	-	-	-	-	-	-	25	25	25
Chloroacetic Acid	-	-	86-100	-	-	-	-	-	-	-	NR	NR	LS
Chlorobenzene	-	-	100	NR	NR	NR	NR	NR	NR	65	NR	NR	40
Chlorofluorocarbon (CFC)	113 (Trichlorotrifluoroethane)	-	-	-	-	-	-	-	-	-	40	40	40
Chlorofluorocarbon (CFC) mix	R-11 (Trichlorofluoromethane), R-12 (Dichlorodifluoromethane)	-	100	-	-	-	-	-	-	-	25	25	40
Chloroform	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Chloroform	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Chloroform/ Dichloroethane/ Methylene Chloride	-	-	all	-	-	-	-	-	-	-	NR	NR	LS
Chloro-o-Tolyl (insecticide emulsion)	n-Chloro-o-Tolyl	-	10	-	-	-	-	-	-	-	50	50	50
Chloropentane (1 to 5 Cl)	-	-	100	-	-	-	-	-	-	-	40	40	55
Chloropicrin (Nitrochloroform)	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Chloropyridine (tetra)	-	-	100	-	-	-	-	-	-	-	25	25	50
Chlorosulfonic Acid	-	-	10	-	-	-	-	-	-	-	NR	NR	NR
Chlorotoluene	-	-	100	-	-	-	-	-	-	-	25	25	40
Choline Chloride	-	-	> 0,5	-	-	-	-	-	-	-	50	50	65
Chrome (hard) Plating Bath Solution	Plating Bath Solution with Sulfuric Acid	-	-	-	-	-	-	-	-	-	NR	-	-
Chrome (hard) Plating Bath Solution	-	-	-	-	-	-	-	-	-	-	60	-	-
Chrome Bath	19% Chromic Acid with Sodium Fluorosilicate and Sulfate	(R14)	-	-	-	-	-	-	-	-	50	50	65
Chrome Reduction Process	-	(R3)	25	-	-	-	-	-	-	-	90	90	-
Chromic Acid	-	-	0,5-10	-	-	-	-	-	-	-	65	65	65
Chromic Acid	-	-	11-20	NR	NR	NR	25	30	30	65	50	65	65

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Chromic Acid	-	-	30	NR	NR	NR	NR	25	30	40	LS	LS	LS
Chromic Acid	-	-	40	-	-	-	-	-	-	-	NR	NR	LS
Chromic Acid/ Nitric Acid Mixture	-	-	5/10	-	-	-	-	-	-	-	40	40	65
Chromic Acid/ Sodium Metabisulfite	-	-	15/45	-	-	-	-	-	-	-	50	65	65
Chromic Acid/ Sulfuric Acid Mixture	maximum total concentration 10%	-	10	-	-	-	-	-	-	-	50	50	65
Chromium Plating Bath	Plating Bath Solution with Sulfuric Acid	-	-	-	-	-	-	-	-	-	NR	NR	NR
Chromium Plating Bath	Plating Bath with Salt Solution	-	-	-	-	-	-	-	-	-	55	55	55
Chromium Sulfate (water soluble forms)	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Citric Acid	-	-	> 0,5	40	50	50	70	75	95	NR	100	100	100
Clopidol	-	(R4)	all	-	-	-	-	-	-	-	-	-	40
Cobalt Chloride	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Cobalt Chloride (reactor)	Hydrochloric-, Sulfuric Acid	(R10)	40	-	-	-	-	-	-	-	-	-	-
Cobalt Citrate	-	-	12	-	-	-	-	-	-	-	80	-	80
Cobalt Nitrate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Coconut Oil	-	(R7)	100	-	-	-	-	-	-	-	80	80	95
Cod-liver Oil	-	(R7)	100	-	-	-	-	-	-	-	40	-	-
Copper Chloride	-	-	sat'd	-	-	-	-	-	-	-	100	105	120
Copper Chloride and Ammonium Compounds ref F6	$CuCl_2$, NH_4Cl, NH_4OH (see Ammonium Hydroxide)	-	26/5/2	-	-	-	-	-	-	-	-	-	-
Copper Cyanide	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Copper Cyanide and Potassium Compounds	Copper Cyanide/ Potassium Cyanide/ Potassium Hydroxide	(R14)	7/2,5/2	-	-	-	-	-	-	-	65	65	25
Copper Cyanide Plating Bath Solution ref F5	Cu, NaCN, $KNaC_4H_4O_6 \cdot 4H_2O$	-	-	-	-	-	-	-	-	-	70	70	70
Copper Matte Dipping Bath Solution	30% Iron (III) Chloride, 19% Hydrochloric acid	(R15,16,17)	-	-	-	-	-	-	-	-	80	95	95
Copper Nitrate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Copper Plating Bath Solution ref F4	$Cu(BF_4)_2$, Cu_2SO_4	(R14)	-	-	-	-	-	-	-	-	80	80	80
Copper Sulfate	-	-	sat'd	-	-	-	-	-	-	-	100	100	120
Corn Oil	-	(R7)	100	-	-	-	-	-	-	-	80	80	100
Corn Starch	-	(R7)	semi wet	-	-	-	-	-	-	-	100	-	-
Corn Sugar/ Syrup (Glucose)	-	(R7)	all	-	-	-	-	-	-	-	80	-	-
Cottonseed Oil	-	(R7)	100	-	-	-	-	-	-	-	100	100	100
Crude Oil (Sweet and Sour)	-	-	100	-	-	-	-	-	-	-	100	100	120
Cumene	-	-	100	-	-	-	-	-	-	-	25	25	50
Cumene/ Toluene/ Xylene	-	-	all	-	-	-	-	-	-	-	25	25	50
Cupric Chloride	see Copper Chloride	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide Disposal	Reaction with Hypo (gives Sodium Thiosulfite)	-	-	-	-	-	-	-	-	-	-	-	40
Cyanuric Acid	-	-	all	-	-	-	-	-	-	-	25	25	50
Cyanuric Chloride	-	(R4)	all	-	-	-	-	-	-	-	50	50	50
Cyclohexane	-	-	100	-	-	-	-	-	-	-	50	50	65
Cyclohexylamine	-	-	100	-	-	-	-	-	-	-	-	-	40
Cyclopentane	-	-	100	-	-	-	-	-	-	-	40	40	50
D	-	-	-	-	-	-	-	-	-	-	-	-	-
Dalapon, Sodium salt	also 2,2- dichloropropionic acid and sodium salt	-	100	-	-	-	-	-	-	-	NR	NR	40
Decanoic Acid (Capric Acid)	-	(R4)	> 0,5	-	-	-	-	-	-	-	80	80	80
Decanol	-	-	100	-	-	-	-	-	-	-	50	50	80
DEHPA and Kerosene	Di-2-Ethylhexyl Phosphoric Acid	-	20	-	-	-	-	-	-	-	80	80	80
Deionized Water	see Water (deionized)	-	-	-	-	-	-	-	-	-	-	-	-

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Demineralized Water	see Water (demineralized)	-	-	-	-	-	-	-	-	-	-	-	-
Detergents (organic)	-	-	all	-	-	-	-	25	-	70	80	70	-
Detergents (sulfonated)	see Sulfonated Detergents	-	-	-	-	-	-	-	-	-	-	-	-
De-waxed Paraffin Distillate	-	-	100	-	-	-	-	-	-	-	80	80	80
Diacetone Alcohol	-	-	10	-	-	-	-	-	-	-	-	40	50
Diacetone Alcohol	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Diallyl Phthalate	-	-	all	40	45	50	60	50	70	80	80	-	100
Diammonium Phosphate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Dibasic Acid	Acid mix 51-61% Glutaric, 18-28% Succinic, 15-25% Adipic, 2% Nitric	-	> 0,5-50	-	-	-	-	-	-	-	80	80	95
Dibromonitrilo-Propionamide	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Dibromophenol	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Dibromopropane	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Dibromopropanol	-	-	100	-	-	-	-	-	-	-	-	-	40
Dibutyl Carbitol	Diethylene glycol dibutyl ether	-	100	-	-	-	-	-	-	-	25	25	40
Dibutyl Ether	-	-	100	-	-	-	-	-	-	-	25	-	80
Dibutyl Phthalate	-	-	100	-	-	-	-	-	-	-	80	-	100
Dibutyl Sebacate	-	-	100	-	-	-	-	-	-	-	50	-	65
Dichloroacetic Acid	see Chloroacetic Acid	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene (ortho and para)	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	50
Dichloroethane	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	25
Dichloroethylene	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Dichloromethane (Methylene Chloride)	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Dichlorophenoxyacetic Acid	2,4-Dichlorophenoxyacetic (Acid,salts,esters and comp.)	(R4)	-	-	-	-	-	-	-	-	50	50	50
Dichloropropane	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Dichloropropene	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Dichloropropionic Acid	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Dichlorotoluene	-	-	100	-	-	-	-	-	-	-	25	25	50
Diesel Fuel	-	-	100	20	35	30	45	25	40	80	80	80	100
Diethanolamine	-	-	100	NR	NR	NR	NR	30	50	25	50	50	65
Diethanolamine/ Ethanolamine	-	-	80/20	-	-	-	-	-	-	-	50	50	50
Diethyl Carbonate	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Diethyl Ether	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Diethyl Formamide	-	-	20	-	-	-	-	-	-	-	40	40	40
Diethyl Formamide	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Diethyl Hydroxylamine	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Diethyl Ketone	-	-	20	-	-	-	-	-	-	-	40	40	50
Diethyl Ketone	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	25
Diethyl Sulfate	-	-	100	-	-	-	-	-	-	-	40	40	50
Diethylamine	-	-	20	-	-	-	-	-	-	-	40	40	40
Diethylamine	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Diethylaminoethanol	-	-	100	-	-	-	-	-	-	-	50	50	50
Diethylbenzene	-	-	100	-	-	-	-	-	-	-	40	40	65
Diethylene Glycol	-	-	100	40	50	55	80	75	95	90	80	80	100
Diethylene Glycol Dimethylether	-	-	20	-	-	-	-	-	-	-	40	40	40
Diethylene Glycol Dimethylether	-	-	100	-	-	-	-	-	-	-	NR	NR	25

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Diethylene Glycol Methyl Ether	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Diethylene Glycol n-Butyl Ether	Ethanol, 2-(2-butoxy-ethoxy) CAS 112-34-5	-	100	-	-	-	-	-	-	-	40	40	40
Diethylenetriaminepentaacetic acid	Sodium salt	-	40	-	-	-	-	-	-	-	40	50	50
Diethylenetriaminepentaacetic acid	-	-	all	-	-	-	-	-	-	-	40	50	50
Diglycolamine (Aminoethoxyethanol)	-	-	20	-	-	-	-	-	-	-	40	40	50
Diglycolamine (Aminoethoxyethanol)	-	-	50	-	-	-	-	-	-	-	40	40	40
Diglycolamine (Aminoethoxyethanol)	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Diisobutyl Ketone	-	-	100	-	-	-	-	-	-	-	NR	NR	50
Diisobutyl Phthalate	-	-	100	-	-	-	-	-	-	-	65	65	65
Diisobutylene	-	-	100	-	-	-	-	-	-	-	40	40	40
Diisonoyl Phthalate	-	-	100	-	-	-	-	-	-	-	65	65	100
Diisopropanolamine	-	-	100	-	-	-	-	-	-	-	50	50	65
Dimethyl Acetamide	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Dimethyl Acetamide	-	-	20	-	-	-	-	-	-	-	40	40	40
Dimethyl Acetamide	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Dimethyl Amine	-	-	20	-	-	-	-	-	-	-	40	40	40
Dimethyl Amine	-	-	40	-	-	-	-	-	-	-	LS	LS	LS
Dimethyl Aniline	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Dimethyl Morpholine	-	-	100	-	-	-	-	-	-	-	NR	NR	50
Dimethyl Phthalate	-	-	100	-	-	-	-	-	-	-	65	65	80
Dimethyl Sulfate	-	-	20	-	-	-	-	-	-	-	40	40	50
Dimethyl Sulfate	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Dimethyl Sulfide	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Dimethyl Sulfoxide (DMSO)	-	-	20	-	-	-	-	-	-	-	40	40	40
Dimethyl Sulfoxide (DMSO)	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Dimethyl Thiazolidine	2,2-Dimethyl Thiazolidine	-	1	-	-	-	-	-	-	-	65	65	80
Dimethyl Tin Dichloride/ Methyl Tin Tri-chloride	Aqueous solution of 90/10	(R12)	50	-	-	-	-	-	-	-	-	-	45
Dimethylamine salt	2,4-D, Dimethylamine salt	-	67	-	-	-	-	-	-	-	50	50	50
Dimethylammonium Hydrochloride	Dimethylamine HCl, DMA-HCl	-	70	-	-	-	-	-	-	-	40	40	50 (R12)
Dimethylcarbonate	-	-	100	-	-	-	-	-	-	-	NR	NR	NR
Dimethylethanolamine	-	-	20	-	-	-	-	-	-	-	50	-	60
Dimethylethanolamine	-	-	100	-	-	-	-	-	-	-	25	25	40
Dimethylformamide	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Dimethylformamide	-	-	20	-	-	-	-	-	-	-	40	40	40
Dimethylformamide	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Dimethylformamide/ Acetonitrile/ Methanol	-	-	26/9/7	-	-	-	-	-	-	-	NR	NR	LS
Dioctyl Phthalate	-	-	100	-	-	-	-	-	-	-	65	65	100
Diphenyl Oxide	Diphenyl Ether, Phenyl Ether	-	100	-	-	-	-	-	-	-	25	25	50
Diphenylmethane-4,4-Diisocyanate (MDI)	-	-	100	-	-	-	-	-	-	-	NR	NR	NR
Dipotassium phosphate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Dipropylene Glycol	-	-	100	NR	50	55	80	75	95	80	80	80	100
Dipropylene Glycol Methyl Ether	Propanol, (2- Methoxy-methyle-thoxy) CAS 34590-94-8	-	20	-	-	-	-	-	-	-	40	50	65
Dipropylene Glycol Methyl Ether	Propanol, (2- Methoxy-methyle-thoxy) CAS 34590-94-8	-	100	-	-	-	-	-	-	-	NR	NR	20
Dishwashing Detergent in Solution	-	(R2)	all	-	-	-	-	-	-	-	80	80	65
Distilled Water	see Water (distilled)	-	-	-	-	-	-	-	-	-	-	-	-

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Divinylbenzene	-	-	100	-	-	-	-	-	-	-	40	40	50
Dodecanol	see Lauryl Alcohol	-	-	-	-	-	-	-	-	-	-	-	-
Dodecene	-	-	100	-	-	-	-	-	-	-	65	65	80
Dodecyl Benzene Sulfonic Acid	-	(R3)	100	-	-	-	-	-	-	-	80	95	100
Dodecyl Benzene Sulfonic Acid Mixture	Dodecyl Benzene Sulfonic Acid/ Sulfuric Acid/ Water/ Oil	-	85/10/4/1	-	-	-	-	-	-	-	65	65	65
Dodecyldimethylamine	-	-	100	-	-	-	-	-	-	-	80	80	100
Dodecylmercaptan	-	-	100	-	-	-	-	-	-	-	80	80	100
DowTherm Heat Transfer Agent	-	-	100	-	-	-	-	-	-	-	50	50	65
E	-	-	-	-	-	-	-	-	-	-	-	-	-
Epichlorohydrin	-	-	100	-	-	-	-	-	-	-	LS	NR	25
Epoxidized Castor Oil	-	-	100	-	-	-	-	-	-	-	40	-	-
Epoxidized Soybean Oil	-	-	100	-	-	-	-	-	-	-	65	65	65
Esters, Fatty Acid	-	-	100	-	-	-	-	-	-	-	80	80	80
Ethanol	-	(R20)	vapor	-	-	-	-	-	-	-	65	80	80
Ethanol (Ethyl Alcohol)	-	-	10	25	30	30	30	30	40	50	50	50	65
Ethanol (Ethyl Alcohol)	-	-	50	NR	20	25	30	25	30	40	40	40	65
Ethanol (Ethyl Alcohol)	-	-	90-95	-	-	-	-	-	-	-	25	25	40
Ethanol (Ethyl Alcohol)	-	-	100	NR	20	25	30	25	25	NR	NR	NR	40
Ethanol/ Ethylacetate/ Methanol/ DMF	-	-	35/29/10/10	-	-	-	-	-	-	-	NR	NR	LS
Ethanolamine	-	-	20	-	-	-	-	-	-	-	40	40	50
Ethanolamine	-	-	100	-	-	-	-	-	-	-	25	25	40
Ethephon	-	-	100	-	-	-	-	-	-	-	-	-	40
Ethoxy Acetic Acid	-	-	10	-	-	-	-	-	-	-	-	-	40
Ethoxy Acetic Acid	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Ethoxylated Alcohol	C12-C14	-	100	-	-	-	-	-	-	-	25	25	50
Ethoxylated Alkyl Amines	C12 and higher molecular wt.	-	100	-	-	-	-	-	-	-	25	25	50
Ethoxylated Nonyl Phenol	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Ethyl Acetate	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Ethyl Acetate	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	25
Ethyl Acetate/ Sodium Hydroxide	-	(R8,14)	4/0-50	-	-	-	-	-	-	-	50	50	40
Ethyl Acrylate	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Ethyl Amine	-	-	20	-	-	-	-	-	-	-	40	40	40
Ethyl Amine	-	-	70	-	-	-	-	-	-	-	NR	NR	LS
Ethyl Benzyl Chloride	-	(R8)	100	-	-	-	-	-	-	-	NR	NR	40
Ethyl Bromide	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Ethyl Chloride	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Ethyl Ether	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ethyl Silicate	-	-	100	-	-	-	-	-	-	-	-	-	40
Ethyl Sulfate	-	-	100	-	-	-	-	-	-	-	40	40	40
Ethyl-3-Ethoxy Propionate	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Ethylbenzene	-	-	100	-	-	-	-	-	-	-	25	25	50
Ethylbenzene/ Benzene	-	-	67/33	-	-	-	-	-	-	-	NR	NR	40
Ethylene Chloride	see Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene Chlorohydrin	-	-	20	-	-	-	-	-	-	-	40	50	65
Ethylene Chlorohydrin	-	-	100	-	-	-	-	-	-	-	40	40	40

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Ethylene Diamine	-	-	20	-	-	-	-	-	-	-	40	40	40
Ethylene Diamine	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Ethylene Dibromide	-	-	100	-	-	-	-	-	-	-	NR	NR	NR
Ethylene Dichloride	see Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene Dichloride/ EDB/ TEL	ED/ Ethylene Dibromide/ Tetra Ethyl Lead (over water sol.)	-	5/5/5	-	-	-	-	-	-	-	NR	NR	LS
Ethylene Glycol	-	-	100	NR	20	35	30	45	60	90	100	100	100
Ethylene Glycol based Coolants	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Ethylene Glycol n-Butylether	Ethanol, (2-butoxy) CAS 111-76-2	-	20	-	-	-	-	-	-	-	40	50	65
Ethylene Glycol n-Butylether	Ethanol, (2-butoxy) CAS 111-76-2	-	100	-	-	-	-	-	-	-	40	40	65
Ethylene Glycol/Sulfuric Acid	-	-	0-40/0-10	-	-	-	-	-	-	-	65	80	80
Ethylene Oxide	-	-	100	-	-	-	-	-	-	-	NR	NR	NR
Ethylenediaminetetraacetic Acid (EDTA)	-	-	all	-	-	-	-	-	-	-	80	80	80
Ethylenesulfonic acid, sodium salt	-	(R3)	all	-	-	-	-	-	-	-	70	70	70
Ethylhexyl Alcohol	2-Ethylhexyl Alcohol	-	100	-	-	-	-	-	-	-	65	70	80
Eucalyptus Oil	-	(R7)	100	-	-	-	-	-	-	-	60	60	60
F	-	-	-	-	-	-	-	-	-	-	-	-	-
Fatty Acid/ Sterol/ Triglyceride	-	-	all	-	-	-	-	-	-	-	100	100	120
Fatty Acid/ Sulfuric Acid	-	(R10)	5/ 2	-	-	-	-	-	-	-	100	100	100
Fatty Acids	-	-	all	-	-	-	-	-	-	-	100	100	120
Ferric Acetate	-	-	all	-	-	-	-	-	-	-	80	80	80
Ferric Chloride	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Ferric Chloride/ Ferrous Chloride	-	-	5/20	-	-	-	-	-	-	-	100	100	100
Ferric Chloride/ Ferrous Chloride/ HCl	-	-	48/0,2/0,2	-	-	-	-	-	-	-	100	100	105
Ferric Chloride/ Hydrochloric Acid	-	(R15,16,18)	0-29/1-20	-	-	-	-	-	-	-	80	80	105
Ferric or Ferrous Sulfate/ Sulfuric Acid	-	-	0-40/0-25	-	-	-	-	-	-	-	100	100	100
Ferric Sulfate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Ferrous Chloride	-	-	> 0,5	35	40	45	65	70	90	95	100	100	100
Ferrous Chloride and compounds/ HCl	Ferrous Chloride+Manganese Chloride+Ferric Chloride/ HCl	(R15,16,18)	1-60/0-20	-	-	-	-	-	-	-	80	100	100
Ferrous Chloride/ Hydrochloric Acid	-	(R15,16,18)	0-29/1-20	-	-	-	-	-	-	-	80	80	100
Ferrous Nitrate	-	-	> 0,5	35	40	45	65	75	95	95	100	100	100
Ferrous Sulfate	-	-	> 0,5	35	40	45	65	75	95	95	100	100	100
Fertilizer 32/ 0/ 0	Total wt. 32% Nitrogen in Urea and Ammonium Nitrate soln.	-	-	-	-	-	-	-	-	-	65	65	65
Fertilizer 8/ 8/ 8	Total wt. 8% Nitrogen, 8% Phosphorus, 8% Potassium	-	-	-	-	-	-	-	-	-	65	65	65
Flue Gas (dry)	-	(R6)	all	-	-	-	-	-	-	-	165	160	205
Flue Gas (wet)	-	-	all	NR	NR	45	65	75	90	90	80	80	100
Fluoboric Acid	-	(R8,14)	all	-	-	-	-	-	-	-	100	100	100
Fluoride Salts/ Hydrochloric Acid	-	(R8,14)	30/10	-	-	-	-	-	-	-	50	50	50
Fluorine in Flue Gas (wet)	-	(R14)	2	-	-	-	-	-	-	-	80	80	100
Fluosilicic Acid	-	(R8,14)	0-10	-	-	-	-	-	-	-	80	80	80
Fluosilicic Acid	-	(R8,14)	11-20	NR	NR	NR	35	35	35	50	60	60	60
Fluosilicic Acid	-	(R8,14)	21-35	-	-	-	-	-	-	-	40	40	40
Fluosilicic Acid Fumes	-	(R8,14)	all	-	-	-	-	-	-	-	80	80	80
Fluosilicic/ Hydrofluoric/ Phosphoric Acids	-	(R8,14)	22/5/5	-	-	-	-	-	-	-	40	40	40
Fluozirconic Acid/ Fluotitanic Acid/ NH4OH	Fluozirconic Acid/ Fluotitanic Acid/ Ammonium Hydroxide	(R8,14)	5/4/3	-	-	-	-	-	-	-	40	40	40
Fly Ash Slurry	-	-	-	-	-	-	-	-	-	-	80	80	80

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Formaldehyde	-	-	all	25	-	-	-	-	-	50	50	50	65
Formaldehyde/ Methanol	-	-	0-37/0-15	-	-	-	-	-	-	-	50	50	65
Formamide	-	-	20	-	-	-	-	-	-	-	40	50	65
Formamide	-	-	100	-	-	-	-	-	-	-	20	20	20
Formic Acid	-	-	10	20	25	35	55	65	80	80	80	80	80
Formic Acid	-	-	25	-	-	-	-	-	-	-	50	50	65
Formic Acid	-	-	50	-	-	-	-	-	-	-	50	50	50
Formic Acid	-	-	85	-	-	-	-	-	-	-	25	25	40
Formic Acid	-	-	98	NR	NR	NR	NR	NR	NR	40	-	-	40
Fuel C (50% Isooctane, 50%Toluene)	-	-	100	-	-	-	-	-	-	-	-	-	50
Fuel C/ Methyl t-Butyl Ether (MTBE)	see Fuel C	-	85/15	-	-	-	-	-	-	-	-	-	50
Fuel Oil	-	-	100	-	-	-	-	-	-	-	80	80	100
Fuel, Diesel	see Diesel Fuel	-	-	-	-	-	-	-	-	-	-	-	-
Fuel, Jet	see Jet Fuel	-	-	-	-	-	-	-	-	-	-	-	-
Fuel, Kerosene	see Kerosene	-	-	-	-	-	-	-	-	-	-	-	-
Fuel, Petrol Unleaded	see Gasoline	-	-	-	-	-	-	-	-	-	-	-	-
Furfural	-	(R1)	0-10	NR	NR	NR	35	NR	NR	38	40	40	50
Furfural	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Furfural (in organic solvent)	-	(R4)	0-20	-	-	-	-	-	-	-	NR	NR	40
Furfural/ Acetic Acid/ Methanol	-	-	30/10/5	-	-	-	-	-	-	-	NR	NR	LS
Furfuryl Alcohol	-	(R8)	20	-	-	-	-	-	-	-	40	40	65
Furfuryl Alcohol	-	(R8)	100	-	-	-	-	-	-	-	NR	NR	25
G	-	-	-	-	-	-	-	-	-	-	-	-	-
Gallic Acid	-	-	sat'd	-	-	-	-	-	-	-	80	80	80
Gasohol (1-100% alcohol)	-	-	100	-	-	-	-	-	-	-	-	-	40
Gasoline (unleaded, no alcohol)	-	-	100	NR	NR	NR	40	NR	NR	25	-	-	50
Glucose	-	(R7)	100	-	-	60	-	-	-	100	80	-	-
Glutamic Acid	-	(R7)	50	-	-	-	-	-	-	-	50	50	50
Glutaraldehyde	-	-	50	-	-	-	-	-	-	-	50	50	50
Glutaric Acid	-	-	50	-	-	-	-	-	-	-	50	50	50
Glycerine	-	-	100	-	-	-	-	-	-	-	100	100	100
Glycine and derivatives	-	-	all	-	-	-	-	-	-	-	40	40	40
Glycol	-	-	100	-	-	-	-	-	-	-	100	100	100
Glycolic Acid	see Hydroxyacetic acid	-	-	-	-	-	-	-	-	-	-	-	-
Glyconic Acid	-	-	50	-	-	-	-	-	-	-	80	80	80
Glyoxal	-	-	40	-	-	-	-	-	-	-	40	40	40
Glyphosate	-	-	all	-	-	-	-	-	-	-	-	-	40
Gold Plating Bath Solution ref F2	$K_3[Fe(CN)_6]\cdot 3H_2O$, $Au(CN)_3$, NaCN	-	-	-	-	-	-	-	-	-	100	100	100
Green Liquor (pulp mill)	-	(R8,14)	all	-	-	-	-	-	-	-	80	80	80
Gypsum Slurry	see Calcium Sulfate	-	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptane	-	-	100	20	30	25	40	25	30	80	100	100	100
Heptane (vapor)	-	-	vapor	-	-	-	-	-	-	-	100	100	100
Herbicides	-	(R3)	-	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	-	-	100	-	-	-	-	-	-	-	LS	LS	50

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Hexadecanol	-	-	100	-	-	-	-	-	-	-	65	65	80
Hexamethylenetetramine	-	-	40	-	-	-	-	-	-	-	40	40	50
Hexane	-	-	100	20	30	25	40	25	30	65	70	70	70
Hexanoic Acid (Caproic Acid)	-	-	100	-	-	-	-	-	-	-	25	25	50
Hot Stack Gas	see Flue Gas	-	-	-	-	-	-	-	-	-	-	-	-
Hydraulic Fluid (Alkaline)	-	(R2)	100	-	-	-	-	-	-	-	-	-	-
Hydraulic Fluid (Glycols)	-	(R2)	100	-	-	-	-	-	-	-	80	80	80
Hydrazine	-	-	20	-	-	-	-	-	-	-	-	LS	LS
Hydrazine	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Hydrazine/ Sodium Phosphate	-	-	5/ 10	-	-	-	-	-	-	-	-	LS	LS
Hydriodic Acid	-	-	40	-	-	-	-	-	-	-	65	65	65
Hydriodic Acid	-	-	57	-	-	-	-	-	-	-	-	40	40
Hydrobromic Acid	-	-	0-25	35	50	50	70	75	95	80	80	80	80
Hydrobromic Acid	-	-	48	-	-	-	-	-	-	-	65	65	65
Hydrobromic Acid	-	-	62	30	50	45	60	65	70	40	40	40	40
Hydrobromic Acid/ Bromine	-	-	40/ 2	-	-	-	-	-	-	-	-	40	40
Hydrochloric Acid	-	(R16,18)	1-15	-	-	-	-	-	-	-	80	100	110
Hydrochloric Acid	-	(R15,16,18)	16-20	20	20	25	35	30	40	40	80	100	110
Hydrochloric Acid	-	(R15,16,18)	21-25	-	-	-	-	-	-	-	65	80	100
Hydrochloric Acid	-	(R15,16,18)	26-30	-	-	-	-	-	-	-	65	80	95
Hydrochloric Acid	-	(R15,16,17)	31-32	-	-	-	-	-	-	-	65	65	80[R5]
Hydrochloric Acid	-	(R15,16,17)	33-34	-	-	-	-	-	-	-	50	50	70[R5]
Hydrochloric Acid	-	(R15,16,17)	35-36	-	-	-	-	-	-	-	50	50	60[R5]
Hydrochloric Acid	-	(R15,16,17)	37	-	-	-	-	-	-	-	40	40	50[R5]
Hydrochloric Acid & Organics	-	(R15,16,17)	0-33% HCl	-	-	-	-	-	-	-	NR	-	65[R5]
Hydrochloric Acid + Aluminum	Hydrochloric Acid + Aluminum (reactor), Aluminum Chloride	(R10,16,18)	< 15% HCl	-	-	-	-	-	-	-	80	80	-
Hydrochloric Acid + Chlorine	-	(R15,16,18)	0,5-20% HCl	-	-	-	-	-	-	-	80	80	100
Hydrochloric Acid, Fumes	Fumes + Free Chlorine (dry above 100°C)	(R6,15,16,18)	-	-	-	-	-	-	-	-	-	-	175
Hydrochloric Acid, Fumes	-	(R6,16)	-	-	-	-	-	-	-	-	100	100	175
Hydrochloric Acid/ Aluminum Chloride	-	(R15,16,18)	30/0-40	-	-	-	-	-	-	-	65	65	80[R5]
Hydrochloric Acid/ Bromine/ Chlorine	-	(R15,16,18)	22/ 0,1/ 0,1	-	-	-	-	-	-	-	65	80	100
Hydrochloric Acid/ Calcium Chloride	-	(R15,16,18)	27/15	-	-	-	-	-	-	-	65	80	95
Hydrochloric Acid/ DETA/ Ammonium Chloride	Hydrochloric Acid/ Diethylene Triamine/ Ammonium Chloride	(R15,16,17)	33/10/10	-	-	-	-	-	-	-	-	-	65
Hydrochloric Acid/ Ferric Chloride	-	(R15,16,18)	1-20/0-29	-	-	-	-	-	-	-	80	80	105
Hydrochloric Acid/ Ferric Chloride/ Organics	-	(R8,15,16,17)	28/35/1	-	-	-	-	-	-	-	NR	NR	65
Hydrochloric Acid/ Ferrous Chloride	-	(R15,16,18)	1-20/0-29	-	-	-	-	-	-	-	80	80	100
Hydrochloric Acid/ Formaldehyde	-	(R8,15,16,17)	25/3	-	-	-	-	-	-	-	NR	NR	65
Hydrochloric/ Hydrofluoric Acid	-	(R8,14,15,17)	0,5-20/0-1	-	-	-	-	-	-	-	65	65	80
Hydrochloric/ Hydrofluoric Acid	-	(R8,14,17)	15/0,1-1	-	-	-	-	-	-	-	80	100	100
Hydrochloric/ Hydrofluoric Acid	-	(R8,14,15,17)	max.tot.20	-	-	-	-	-	-	-	40	40	40
Hydrochloric/ Hydrofluoric Acid	-	(R8,14,15,17)	25/6	-	-	-	-	-	-	-	40	40	50
Hydrochloric/ Hydrofluoric Acid	-	(R8,14,15,17)	30/15	-	-	-	-	-	-	-	-	-	40
Hydrochloric/ Hydrofluoric Acid	-	(R8,14,15,17)	36/1	-	-	-	-	-	-	-	-	-	40[R5]
Hydrochloric/ Hydrofluoric/ Xylene	-	-	15/15/70	-	-	-	-	-	-	-	-	-	NR
Hydrochloric/ oth.acid mix, Nitrobenzene	Hydrochloric/ Hydrofluoric/ Phosphoric Acid, Nitrobenzene	(R8,14)	15/1/1/0,5	-	-	-	-	-	-	-	NR	NR	40

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Hydrocyanic Acid	-	-	all	-	-	-	-	-	-	-	100	100	100
Hydrofluoric Acid	-	(R8,14)	10	-	-	-	-	-	-	-	65	65	65
Hydrofluoric Acid	-	(R8,14)	20	-	-	-	-	-	-	-	40	40	40
Hydrofluoric/ Nitric Acid	-	(R8,14)	3-5/30-35	-	-	-	-	-	-	-	NR	NR	LS
Hydrofluoric/ Nitric Acid	-	(R8,14)	6/20	-	-	-	-	-	-	-	50	55	60
Hydrofluoric/ Nitirc Acid	-	(R8,14)	15/15	-	-	-	-	-	-	-	-	-	40
Hydrofluoric/ Nitric/ Sulfuric Acid	-	(R8,14)	8/20/2	-	-	-	-	-	-	-	-	-	60
Hydrofluosilicic Acid	see Fluosilicic Acid	-	-	-	-	-	-	-	-	-	-	-	-
Hydrofluosilicic Acid / Polyaluminum Chloride	Polyaluminum Hydroxychloride or Polyaluminum Chloride	(R8,14)	1-22/1-35	-	-	-	-	-	-	-	40	40	40
Hydrofluosilicic Acid/ Zinc Chloride	-	(R14)	20/all	-	-	-	-	-	-	-	40	40	40
Hydrogen Bromide (dry gas)	-	-	100	-	-	-	-	-	-	-	80	80	100
Hydrogen Bromide (wet gas)	-	-	100	-	-	-	-	-	-	-	80	80	80
Hydrogen Chloride (dry gas)	-	(R3,6)	100	-	-	-	-	-	-	-	100	100	175
Hydrogen Chloride (wet gas)	-	-	100	-	-	-	-	-	-	-	100	100	110
Hydrogen Fluoride (dry gas)	(dry gas, vapor (if wet max.40°C))	(R3,8,11,14)	-	-	-	-	-	-	-	-	80	80	80
Hydrogen Peroxide	-	(R3,8,11)	5	NR	NR	NR	30	60	65	65	65	65	65
Hydrogen Peroxide	-	(R3,8,11)	30	NR	NR	NR	NR	25	25	40	40	40	65
Hydrogen Peroxide	-	(R3,8,11)	35	-	-	-	-	-	-	-	25	30	40
Hydrogen Peroxide	-	(R3,8,11)	50	-	-	-	-	-	-	-	NR	NR	LS
Hydrogen Sulfide	-	(R3,6)	5	45	55	60	60	60	65	100	100	100	175
Hydrogen Sulfide (aqueous)	-	-	all	-	-	-	-	-	-	-	100	100	100
Hydrogen Sulfide (dry gas)	-	-	100	-	-	-	-	-	-	-	100	100	110
Hydrogenated tallow alkyl amine	C8-C18	-	100	-	-	-	-	-	-	-	40	-	-
Hydrosulfite Bleach	Aqueous solution 5% Zinc Hydro-sulfite and 2,5% Tripolyphosphate	(R13)	-	-	-	-	-	-	-	-	80	80	80
Hydroxyacetic Acid (Glycolic Acid)	-	-	20	-	-	-	-	-	-	-	40	40	65
Hydroxyacetic Acid (Glycolic Acid)	-	-	70	-	-	-	-	-	-	-	40	40	40
Hydroxylamine Acid Sulfate	-	-	> 0,5	-	-	-	-	-	-	-	-	-	100
Hypochlorous Acid	-	(R3)	0-10	-	-	-	-	-	-	-	-	-	-
Hypophosphorous Acid	-	-	0-50	-	-	-	-	-	-	-	50	50	50
I	-	-	-	-	-	-	-	-	-	-	-	-	-
Imidazoline Acetate/ Solvent	-	(R4,8)	20	-	-	-	-	-	-	-	40	40	50
Imidazoline Acetate/ Solvent	-	(R4,8)	60	-	-	-	-	-	-	-	NR	NR	40
Incinerator Gases	see Flue Gas	-	-	-	-	-	-	-	-	-	-	-	-
Insecticides emulsions	-	(R3)	-	-	-	-	-	-	-	-	-	-	-
Iodine (crystals)	-	-	100	-	-	-	-	-	-	-	65	65	65
Iodine (vapor)	-	-	100	-	-	-	-	-	-	-	65	65	80
Ion Exchange Resin	fine mesh resins	-	-	-	-	-	-	-	-	-	80	80	80
Iron and Steel Cleaning Acid Bath	9% Hydrochloric and 23% Sulfuric acid	-	-	-	-	-	-	-	-	-	80	80	100
Iron Plating Bath Solution ref F14	$FeCl_2$, $CaCl_2$, $FeSO_4$,$(NH_4)_2SO_4$	-	-	-	-	-	-	-	-	-	80	80	120
Isoamyl Alcohol	-	-	20	-	-	-	-	-	-	-	65	65	80
Isoamyl Alcohol	-	-	100	-	-	-	-	-	-	-	50	50	65
Isobutyl Alcohol	-	-	20	-	-	-	-	-	-	-	65	65	80
Isobutyl Alcohol	-	-	100	-	-	-	-	-	-	-	50	50	65
Isodecanol	-	-	100	-	-	-	-	-	-	-	50	50	80
Isononyl Alcohol	-	-	100	-	-	-	-	-	-	-	65	65	65

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Isooctyl Adipate	-	-	100	-	-	-	-	-	-	-	50	50	65
Isooctyl Alcohol	-	-	100	-	-	-	-	-	-	-	65	65	65
Isopropanol Amine	-	-	100	-	-	-	-	-	-	-	50	50	50
Isopropyl Alcohol (Isopropanol)	-	-	100	-	-	-	-	-	-	-	50	50	50
Isopropyl Amine	-	-	0,5-50	-	-	-	-	-	-	-	40	40	40
Isopropyl Amine	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Isopropyl Myristate	-	-	100	-	-	-	-	-	-	-	100	-	110
Isopropyl Palmitate	-	-	100	-	-	-	-	-	-	-	100	100	110
Itaconic Acid	-	-	0,5-40	-	-	-	-	-	-	-	60	60	60
J	-	-	-	-	-	-	-	-	-	-	-	-	-
Jet Fuel (general)	-	-	100	NR	NR	NR	30	NR	25	NR	60	60	60
K	-	-	-	-	-	-	-	-	-	-	-	-	-
Kerosene	-	-	100	20	40	30	50	30	35	80	80	80	80
Kraft Recovery Boiler Breeching (paper mill)	see Flue Gas	-	-	-	-	-	-	-	-	-	-	-	-
L	-	-	-	-	-	-	-	-	-	-	-	-	-
Lactic Acid	-	-	all	35	50	55	70	70	95	100	100	100	100
Latex (Emulsion in Water)	see under specific polymer name	-	all	-	-	-	NR	-	25	50	50	50	50
Lauroyl Chloride	-	-	100	-	-	-	-	-	-	-	40	-	50
Lauryl Alcohol	-	-	100	-	-	-	-	-	-	-	65	65	80
Lauryl Chloride	-	-	100	-	-	-	-	-	-	-	100	100	100
Lauryl Mercaptan	-	-	100	-	-	-	-	-	-	-	80	80	100
Lead Acetate	-	-	sat'd	-	-	-	-	-	-	-	100	100	110
Levulinic Acid	-	-	sat'd	-	-	-	-	-	-	-	100	100	110
Lignin Sulfonate	-	-	all	-	-	-	-	-	-	-	80	80	80
Lime Slurry	see Calcium Hydroxide	-	-	-	-	-	-	-	-	-	-	-	-
Limestone Slurry	see Calcium Carbonate	-	-	-	-	-	-	-	-	-	-	-	-
Linseed Oil	-	(R7)	100	-	-	-	-	-	-	-	100	100	110
Liquid Petroleum Gas (LPG)	-	-	100	-	-	-	-	-	-	-	60	60	60
Lithium Bromide	-	-	sat'd	-	-	-	-	-	-	-	100	100	120
Lithium Carbonate	-	(R14)	all	-	-	-	-	-	-	-	80	80	80
Lithium Chloride	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Lithium Chloride	-	-	sat'd (35-40)	-	-	-	-	-	-	-	100	100	120
Lithium Hydroxide	-	(R14)	all	-	-	-	-	-	-	-	80	80	40
Lithium Hypochlorite	-	(R8,11,13,16)	all	-	-	-	-	-	-	-	80	80	40
M	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium Bicarbonate	-	-	all	30	30	40	40	60	-	80	80	80	80
Magnesium Bisulfite	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Magnesium Carbonate	-	-	all	-	-	-	-	-	-	-	80	80	80
Magnesium Chloride	-	-	sat'd	-	-	-	-	-	-	-	100	100	120
Magnesium Fluorosilicate	-	(R14)	all	-	-	-	-	-	-	-	80	-	80
Magnesium Hydroxide	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Magnesium Nitrate	-	-	all	-	-	-	-	-	-	-	100	100	100
Magnesium Phosphate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Magnesium Sulfate	-	-	sat'd	40	45	50	70	75	95	95	100	100	120
Magnesium Sulfate/ Phosphoric Acid	-	-	1-40/0-36	-	-	-	-	-	-	-	100	100	100

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Maleic Acid	-	-	> 0,5	35	45	45	65	75	90	90	80	80	100
Manganese Chloride (Manganous Chloride)	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Manganese Nitrate (Manganous)	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Manganese Sulfate (Manganous Sulfate)	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
MDI (Methylenediphenyl Diisocyanate)	see Diphenylmethane-4,4-Di-isocyanate	-	-	-	-	-	-	-	-	-	-	-	-
Melamine Formaldehyde Resin	-	-	all	-	-	-	-	-	-	-	40	40	50
Mercaptoacetic Acid	-	-	all	-	-	-	-	-	-	-	NR	NR	40
Mercaptoethanol	-	-	10	-	-	-	-	-	-	-	-	-	80
Mercuric Chloride	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Mercurous Chloride	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Mercury	-	-	100	45	55	60	100	65	100	100	100	100	120
Metal Pickling Acid Solutions	Hydrochloric-, Sulfuric Acid and/or Phosphoric Acids	(R16)	0,5-15 total	-	-	-	-	-	-	-	100	100	100
Methacrylic Acid	-	(R12)	25	-	-	-	-	-	-	-	40	40	50
Methacrylic Acid	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Methane Sulfonic Acid	-	(R3)	20-100	-	-	-	-	-	-	-	NR	NR	40
Methane/ Nitrogen	-	-	70/30	-	-	-	-	-	-	-	60	80	95
Methanol	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Methanol (Methyl Alcohol)	-	-	5	-	-	-	-	-	-	-	50	50	50
Methanol (Methyl Alcohol)	-	-	20	-	-	-	-	-	-	-	NR	NR	40
Methanol (Methyl Alcohol)	-	-	40-100	NR	30	25	35	25	30	NR	NR	NR	40
Methanol/ Ethanolamine	-	-	0-60/0-20	-	-	-	-	-	-	-	NR	NR	40
Methanol/ Formaldehyde	-	-	0-15/0-37	-	-	-	-	-	-	-	50	50	65
Methanol/ Formaldehyde	-	-	35/4	-	-	-	-	-	-	-	NR	NR	40
Methanol/ Formaldehyde/ Sulfuric Acid	-	-	60/20/2	-	-	-	-	-	-	-	NR	NR	40
Methoxy-2-Propanol	1-Methoxy-2-Propanol	-	100	-	-	-	-	-	-	-	NR	NR	20
Methyl Acetate	-	-	20	-	-	-	-	-	-	-	40	40	40
Methyl Acetate	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Methyl Bromide	-	-	10	-	-	-	-	-	-	-	25	25	25
Methyl Bromide	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Methyl Butyl Ketone (MBK)	includes Methyl t-Butyl Ketone (MTBK) and other Isomers	-	100	-	-	-	-	-	-	-	25	25	50
Methyl Chloride	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Methyl Chloride, Gas	-	-	all	-	-	-	-	-	-	-	40	40	65
Methyl Chloroform	also 1,1,1-Trichloroethane inhibited	-	100	-	-	-	-	-	-	-	40	40	50
Methyl Chloroform/ Perchloroethylene	-	-	75/25	-	-	-	-	-	-	-	40	40	50
Methyl Distearyl Ammonium Chloride/ Isopropanol	-	-	75/25	-	-	-	-	-	-	-	50	50	50
Methyl Ethyl Ketone (MEK)	-	-	20	NR	NR	NR	NR	NR	NR	NR	40	40	40
Methyl Ethyl Ketone (MEK)	-	-	100	-	-	-	-	-	-	-	LS	LS	20
Methyl Ethyl Ketone Mixture	MEK, 2-Butanol, Triethylamine, 2- Butoxy Ethanol	-	< 25 total	-	-	-	-	-	-	-	LS	LS	40
Methyl Formate	-	-	5	-	-	-	-	-	-	-	40	45	50
Methyl Isobutyl Ketone (MIBK)	-	-	100	-	-	-	-	-	-	-	25	25	50
Methyl Mercaptan (Gas)	-	-	all	-	-	-	-	-	-	-	40	40	65
Methyl Methacrylate	-	-	all	NR	NR	NR	NR	NR	NR	NR	NR	NR	25
Methyl tert-butylether (MTBE)	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Methyl tert-butylether (MTBE)	-	-	20	-	-	-	-	-	-	-	40	40	50
Methyl tert-butylether (MTBE)	-	-	100	-	-	-	-	-	-	-	NR	NR	25

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Methyl tert-butylether (MTBE) / Fuel C	see Fuel C	-	15/85	-	-	-	-	-	-	-	40	40	50
Methyl Tin Trichloride/ Dimethyl Tin Di-chloride	Aqueous solution of 90/10	(R12)	50	-	-	-	-	-	-	-	-	-	45
Methyl-2-pyrrolidone	see N-methyl-2-pyrrolidone	-	-	-	-	-	-	-	-	-	-	-	-
Methyl-2-pyrrolidone	see N-methyl-2-pyrrolidone	-	-	-	-	-	-	-	-	-	-	-	-
Methyl-3-Butenenitrile	2-Methyl-3-Butenenitrile	-	all	-	-	-	-	-	-	-	25	25	40
Methylamine	-	-	20	-	-	-	-	-	-	-	40	40	40
Methylamine	-	-	40	-	-	-	-	-	-	-	LS	LS	LS
Methylamine	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Methyldiethanolamine	-	-	20	-	-	-	-	-	-	-	50	50	80
Methyldiethanolamine	-	-	100	-	-	-	-	-	-	-	50	50	65
Methylene Chloride	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Methylene Chloride	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Methylene Chloride/ Methanol/ Water	-	-	1/4/95	-	-	-	-	-	-	-	40	40	50
Methylstyrene (alpha)	-	-	100	-	-	-	-	-	-	-	25	25	50
Milk and Milk Products	-	(R7)	all	25	25	28	28	28	-	70	70	70	-
Mineral Oils (Aliphatic)	-	-	100	-	-	-	-	-	-	-	100	100	120
Molasses	-	(R7)	100	-	-	-	-	-	-	-	80	-	-
Mono chloroacetic Acid	see Chloroacetic Acid	-	-	-	-	-	-	-	-	-	-	-	-
Mono chlorobenzene	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Mono ethanolamine	see Ethanolamine	-	-	-	-	-	-	-	-	-	-	-	-
Mono methylhydrazine	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Morpholine	-	(R8)	20	-	-	-	-	-	-	-	40	45	50
Morpholine	-	(R8)	100	-	-	-	-	-	-	-	NR	NR	25
Morpholine/ Cyclohexylamine	-	-	all	-	-	-	-	-	-	-	NR	NR	25
Motor Oil	-	-	100	-	-	-	-	-	-	-	100	100	120
Muriatic Acid	see Hydrochloric Acid	-	-	-	-	-	-	-	-	-	-	-	-
Myristic Acid	-	-	100	-	-	-	-	-	-	-	100	100	120
N	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphtha (Aliphatic)	-	-	100	-	-	-	-	-	-	-	80	80	100
Naphtha (Heavy Aromatic)	-	-	100	20	30	25	40	30	30	-	-	-	50
Naphthalene	-	-	100	20	45	40	65	45	50	80	100	100	100
Neutralizer & Desmut	-	-	all	-	-	-	-	-	-	-	65	65	65
Nickel Chloride	-	-	> 0,5	40	50	50	70	75	95	90	100	100	100
Nickel Nitrate	-	-	> 0,5	40	50	50	70	75	95	90	100	100	100
Nickel Plating Bath soln. Type I ref F11	$NiSO_4$, NH_4Cl, H_3BO_3	-	-	30	45	45	60	70	90	80	80	80	80
Nickel Plating Bath soln. Type II ref F12	$NiSO_4$, $NiCl_2$, H_3BO_3	-	-	30	45	45	60	70	90	80	100	100	100
Nickel Plating Bath soln. Type III ref F13	$NiSO_4$, $NiCl_2$, H_3BO_3	-	-	30	45	45	60	70	90	80	80	80	80
Nickel Sulfamate	-	-	all	-	-	-	-	-	-	-	80	80	80
Nickel Sulfate	-	-	> 0,5	40	50	50	70	75	95	90	100	100	100
Nitric Acid	-	-	0-5	30	45	45	55	65	70	65	65	65	80
Nitric Acid	-	-	6-10	-	-	-	-	-	-	-	65	65	65
Nitric Acid	-	-	11-20	25	40	25	50	60	50	50	50	50	65
Nitric Acid	-	(R8)	21-29	-	-	-	-	-	-	-	40	40	50
Nitric Acid	-	(R8)	30-35	NR	NR	NR	NR	40	30	40	25	30	40
Nitric Acid	-	(R8)	36-40	NR	NR	NR	NR	NR	NR	NR	NR	NR	40

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Nitric Acid	-	-	70	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Nitric Acid Fumes	-	(R8,20)	> 60 (soln.)	-	-	-	-	-	-	-	80	80	80
Nitric Acid Fumes	-	(R8)	< 60 (soln.)	NR	NR	NR	NR	NR	NR	NR	80	80	80
Nitric Acid/ Hexavalent Chromium	Chromic Acid	-	10/5	-	-	-	-	-	-	-	40	40	65
Nitric Acid/ Hydrogen Peroxide/ Hydrofluoric Acid	-	(R8,11,14)	30/5/0,5	-	-	-	-	-	-	-	25	30	40
Nitric/ Hydrofluoric Acid	-	(R8,14)	25/3	-	-	-	-	-	-	-	40	40	50
Nitric/ Hydrofluoric Acid	-	(R8,14)	15/15	-	-	-	-	-	-	-	-	-	40
Nitric/ Hydrofluoric Acid	-	(R8,14)	20/6	-	-	-	-	-	-	-	50	55	60
Nitric/ Hydrofluoric Acid	-	-	30-35/3-5	-	-	-	-	-	-	-	NR	NR	LS
Nitric/ Hydrofluoric/ Sulfuric Acid	-	(R8,14)	20/8/2	-	-	-	-	-	-	-	-	-	60
Nitric/ Phosphoric Acid	-	(R8)	24/23	-	-	-	-	-	-	-	40	40	50
Nitric/ Phosphoric Acid	-	(R8)	5/ 5	-	-	-	-	-	-	-	65	80	80
Nitric/ Sulfuric Acid	-	(R8)	20/20	-	-	-	-	-	-	-	40	40	50
Nitric/ Sulfuric/ Phosphoric Acid	-	-	20/5/2	-	-	-	-	-	-	-	40	40	50
Nitrobenzene	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	40
Nitrogen Tetroxide	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nitrophenol	-	(R1)	-	-	-	-	-	-	-	-	NR	NR	40
N-methyl-2-pyrrolidone	-	-	10	-	-	-	-	-	-	-	-	-	LS
N-methyl-2-pyrrolidone	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Noncondensable Blow Down Gases	see Flue Gas or Blow Down	-	-	-	-	-	-	-	-	-	-	-	-
O	-	-	-	-	-	-	-	-	-	-	-	-	-
Octanoic Acid	see Caprylic Acid	-	-	-	-	-	-	-	-	-	-	-	-
Oil (Crude)	see Crude Oil	-	-	-	-	-	-	-	-	-	-	-	-
Oleic Acid	-	-	100	40	50	50	70	70	95	100	100	-	-
Oleum (fuming Sulfuric Acid)	-	-	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Olive Oil	-	(R7)	100	-	-	-	-	-	-	-	100	-	-
Ortho-dichlorobenzene	see Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
Oxalic Acid	-	(R7)	sat'd	-	-	-	-	-	-	-	50	50	50
Ozone in solution	-	(R3)	2mg/l	-	-	-	-	-	-	-	40	40	40
P	-	-	-	-	-	-	-	-	-	-	-	-	-
Palladium suspensions	in HCl (see Hydrochloric Acid)	-	-	-	-	-	-	-	-	-	-	-	-
Palladium suspensions	in NH_4OH (see Ammonium Hydroxide)	-	-	-	-	-	-	-	-	-	-	-	-
Palmitic Acid	-	(R7)	100	-	-	-	-	-	-	-	100	-	-
Paper Mill Effluent (pulp mill)	see Sulfite/ Sulfate Liquors	-	-	-	-	-	-	-	-	-	-	-	-
Para-dichlorobenzene	see Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-
Parrafin Distilate (dewaxed)	-	-	100	-	-	-	-	-	-	-	80	80	80
Peanut Oil	-	(R7)	100	-	-	-	-	-	-	-	80	-	-
Pentabromo diphenyl oxide	-	-	100	-	-	-	-	-	-	-	25	25	50
Pentachlorophenol	-	(R4)	all	-	-	-	-	-	-	-	50	50	50
Pentanedioic Acid	see Glutaric Acid	-	-	-	-	-	-	-	-	-	-	-	-
Peracetic Acid	-	(R3,8,11,14)	20	-	-	-	-	-	-	-	40	40	40
Peracetic Acid	-	-	35	-	-	-	-	-	-	-	NR	NR	LS
Perchloric Acid	-	-	10	NR	NR	20	NR	50	50	65	65	65	65
Perchloric Acid	-	-	30	NR	NR	NR	NR	30	25	40	40	40	40
Perchloroethylene	-	-	100	-	-	-	-	-	-	-	25	25	50

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Perchloroethylene/ Methyl chloroform	-	-	75/25	-	-	-	-	-	-	-	40	40	50
PG/ Ethoxylated Fatty Alcohols/ BDG	Prop.Gly./ Ethox. Fatty Alco./ Diethylene Glycol n-Butyl Ether	-	60/20/20	-	-	-	-	-	-	-	40	40	50
Phenol (Carbolic Acid)	-	(R8)	0-2	-	-	-	-	-	-	-	25	25	50
Phenol (Carbolic Acid)	-	(R8)	5	-	-	-	-	-	-	-	NR	NR	50
Phenol (Carbolic Acid)	-	(R8)	10	-	-	-	-	-	-	-	NR	NR	50
Phenol (Carbolic Acid)	-	(R8)	15	-	-	-	-	-	-	-	NR	NR	30
Phenol (Carbolic Acid)	-	(R8)	88	-	-	-	-	-	-	-	NR	NR	20
Phenol Formaldehyde Resin	-	-	all	-	-	-	-	-	-	-	40	40	50
Phenol Sulfonic Acid	-	(R3)	all	-	-	-	-	-	-	-	25	25	25
Phenol/ Methanol/ Anionic Detergent	-	-	15/10/20	-	-	-	-	-	-	-	NR	NR	LS
Phenolic Resin/ Phenol	-	(R8)	80/20	-	-	-	-	-	-	-	-	-	25
Phenolic Resin/ Phenol	-	(R8)	90/10	-	-	-	-	-	-	-	-	-	50
Phosphoric Acid	-	-	0,5-85	40	50	50	65	70	90	90	100	100	100
Phosphoric Acid	-	-	85-100	-	-	-	-	-	-	-	100	100	105
Phosphoric Acid (Polyphosphoric Acid)	-	-	115	-	-	-	-	-	-	-	100	100	105
Phosphoric Acid (vapor)	-	(R3)	all	-	-	-	-	-	-	-	100	100	120
Phosphoric Acid 76%	Superphosphoric Acid 76% P_2O_5	-	105	-	-	-	-	-	-	-	100	100	105
Phosphoric Acid/ Gypsum	-	-	61/39	-	-	-	-	-	-	-	100	100	100
Phosphoric Acid/ Hydrochloric Acid	saturated with Cl_2	(R15,16,18)	15/9	-	-	-	-	-	-	-	100	100	100
Phosphoric Acid/ Phosphorous Pentoxide (vap. mix.)	with, Hydrochloric Acid and Sulfuric Dioxide	-	vapor	-	-	-	-	-	-	-	100	100	110
Phosphoric Acid/ Sulfuric Acid	-	-	85/ 15	-	-	-	-	-	-	-	40	40	50
Phosphoric Acid/ Sulfuric Acid	-	-	0-25/0-25	-	-	-	-	-	-	-	80	80	80
Phosphoric Acid/ Tributyl Phosphate	vapor phase, condensation	-	85/0,5	-	-	-	-	-	-	-	50	50	60
Phosphoric Acid/ Tributyl Phosphate/ Hydrofluoric Acid	no condensation of TBP	-	88/0,1/0,03	-	-	-	-	-	-	-	80	80	100
Phosphoric Acid/ Zinc Chloride	-	-	0-100/0,5-70	-	-	-	-	-	-	-	100	100	100
Phosphoric/ Sulfuric/ Hydrofluoric Acid	-	(R8,14)	0-75/1/0-3	-	-	-	-	-	-	-	65	65	65
Phosphorous Acid	-	-	70	-	-	-	-	-	-	-	80	80	80
Phosphorous Acid/ Hydrochloric Acid	-	(R5,15,16)	0-70/6-10	-	-	-	-	-	-	-	65	65	80
Phosphorous Acid/ Hydrochloric Acid	-	(R5,16)	0-70/1-5	-	-	-	-	-	-	-	100	100	100
Phosphorus Oxychloride	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Phosphorus Trichloride	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Phthalic Acid	-	(R4)	all	35	45	45	65	70	90	100	100	100	100
Picric Acid (alcoholic)	-	(R4)	10	-	-	-	-	-	-	-	NR	NR	40
Pine Oil	-	-	100	-	-	-	-	-	-	-	90	90	90
Plating Bath Chemicals	-	(R3)	-	-	-	-	-	-	-	-	-	-	-
Polyacrylamide	-	-	all	-	-	-	-	-	-	-	80	80	80
Polyacrylic Acid	-	-	all	-	-	-	-	-	-	-	80	80	80
Polyethylene Glycol	-	-	100	-	-	-	-	-	-	-	100	100	100
Polyethylene glycol methyl ether	-	(R3)	100	-	-	-	-	-	-	-	-	-	-
Polyethyleneimine	-	-	all	-	-	-	-	-	-	-	80	80	80
Polyphosphoric Acid	115% H_3PO_4 see Phosphoric acid	-	-	-	-	-	-	-	-	-	-	-	-
Polyvinyl Acetate Adhesives	-	-	all	-	-	-	-	-	-	-	50	50	50
Polyvinyl Alcohol	-	-	100	-	-	-	-	-	-	-	80	80	80
Polyvinyl Chloride Latex	with 35 parts Dioctyl Phthalate	-	all	-	-	-	-	-	-	-	50	50	50
Potassium Aluminum Sulfate	-	-	sat'd	-	-	-	-	-	-	-	100	100	120

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Potassium Bicarbonate	-	-	> 0,5	-	-	-	-	-	-	-	80	80	80
Potassium Bromide	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Potassium Carbonate	-	(R14)	0-50	NR	NR	NR	25	25	80	65	80	80	65
Potassium Chloride	-	-	> 0,5	40	50	45	70	75	95	90	100	100	100
Potassium Detergent Soluiton ref F19	-	(R8,11,16)	50/40/10	-	-	-	-	-	-	-	50	-	-
Potassium Dichromate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Potassium Extinguishing Compositon ref F20	-	(R14)	20/4/1	-	-	-	-	-	-	-	80	80	65
Potassium Ferricyanide	-	-	> 0,5	35	50	45	70	75	95	90	100	100	100
Potassium Ferrocyanide	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Potassium Fluoride	-	-	all	-	-	-	-	-	-	-	80	80	80
Potassium Gold Cyanide	-	-	12	-	-	-	-	-	-	-	100	100	100
Potassium Hydroxide	-	(R8,14)	0-45	NR	NR	NR	NR	35	45	45	65	65	25
Potassium Hydroxide and Cyanide compounds	KOH/ KCN/ CuCN	(R14)	2/2,5/7	-	-	-	-	-	-	-	65	65	25
Potassium Iodide	-	-	all	-	-	-	-	-	-	-	100	100	100
Potassium Nitrate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Potassium Oxalate	-	-	all	-	-	-	-	-	-	-	65	65	65
Potassium Permanganate	-	-	> 0,5	NR	NR	NR	25	25	35	90	100	100	100
Potassium Persulfate	-	-	all	-	-	-	-	-	-	-	100	100	100
Potassium Pyrophosphate	-	-	60	-	-	-	-	-	-	-	55	55	65
Potassium Silicofluoride	-	(R14)	all	-	-	-	-	-	-	-	40	40	40
Potassium Sulfate	-	-	> 0,5	40	50	45	70	75	95	90	100	100	100
Propane	-	-	100	-	-	-	-	-	-	-	60	60	60
Propanol (n-)	-	(R20)	vapor	-	-	-	-	-	-	-	80	80	80
Propanol (n-)	-	-	100	-	-	-	-	-	-	-	40	40	50
Propenal	see Acrolein	-	-	-	-	-	-	-	-	-	-	-	-
Propionic Acid	-	-	0-50	-	-	-	-	-	-	80	80	80	80
Propionic Acid	-	-	100	-	-	-	-	-	-	-	NR	NR	40
Propionyl Chloride	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Propyl Acetate	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Propyl Bromide	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Propyl Chloride	-	-	100	-	-	-	-	-	-	-	NR	NR	25
Propylene Glycol	-	-	100	40	50	55	80	75	95	80	100	100	100
Propylene Glycol Methyl Ether	2-Propanol,1- Methoxy-; CAS 107-98-2	-	100	-	-	-	-	-	-	-	NR	NR	20
Propylene Glycol Methyl Ether Acetate	-	(R8)	20	-	-	-	-	-	-	-	40	40	50
Propylene Glycol Methyl Ether Acetate	-	(R8)	100	-	-	-	-	-	-	-	NR	NR	20
Propylene Glycol/ Monoethanolamine	-	-	0-99/ 1	-	-	-	-	-	-	-	25	25	40
Propylene Oxide	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Propylene Oxide	-	-	100	-	-	-	-	-	-	-	NR	NR	NR
Pulp (paper mill) Blow Down	see Blow Down	-	-	-	-	-	-	-	-	-	-	-	-
Pyridine	-	-	20	-	-	-	-	-	-	-	40	40	40
Pyridine	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Q	-	-	-	-	-	-	-	-	-	-	-	-	-
Quaternary Amine Salts	-	-	> 0,5	30	40	40	60	65	80	70	80	80	80
Quinoline	-	-	20	-	-	-	-	-	-	-	40	40	40
Quinoline	-	-	100	-	-	-	-	-	-	-	-	-	LS

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
R	-	-	-	-	-	-	-	-	-	-	-	-	-
Radiation Resistance	-	(R3)	-	-	-	-	-	-	-	-	-	-	-
Rayon Spin Bath	-	-	-	-	-	-	-	-	-	-	-	-	60
Rayon Spinning	-	-	vapor	-	-	-	-	-	-	-	60	60	60
Recovery Boiler Gases	see Flue Gas	-	-	-	-	-	-	-	-	-	-	-	-
Red Liquor	-	-	all	-	-	-	-	-	-	-	80	80	80
S	-	-	-	-	-	-	-	-	-	-	-	-	-
Salicylic Acid	-	-	all	-	-	-	-	-	-	-	70	-	-
Salt Brine	see Brine, Salt	-	-	-	-	-	-	-	-	-	-	-	-
Sea Water	see Water (sea)	-	-	-	-	-	-	-	-	-	-	-	-
Selenious Acid	-	-	all	-	-	-	-	-	-	-	100	100	100
Silicon Tetrafluoride/Hydrofluoric/ Sulfuric Acid	-	(R8,14)	< 10 total	-	-	-	-	-	-	-	50	50	50
Silver Nitrate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Silver Plating Bath Solution ref F3	Ag, K, NaCN,K_2CO_3	(R14)	-	-	-	-	-	-	-	-	80	80	65
Sodium Acetate	-	-	> 0,5	40	50	50	70	75	95	100	100	100	100
Sodium Alkyd Aryl Sulfonates	-	-	all	-	-	-	-	-	-	-	80	80	80
Sodium Aluminate	-	(R14)	all	-	-	-	-	-	-	-	70	70	50
Sodium Benzoate	-	-	all	-	-	-	-	-	-	-	80	80	80
Sodium Bicarbonate	-	-	all	40	50	50	70	75	95	80	80	80	80
Sodium Bicarbonate/ Sodium Carbonate	-	(R14)	15/20	-	-	-	-	-	-	-	80	80	65
Sodium Bifluoride	-	(R14)	all	-	-	-	-	-	-	-	50	50	50
Sodium Bisulfate	-	-	> 0,5	40	50	50	70	75	95	100	100	100	100
Sodium Bisulfide (Hydrosulfide)	-	-	all	-	-	-	-	-	-	-	80	80	80
Sodium Bisulfite	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Borate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Borohydride	Stabilized water solution	-	all	-	-	-	-	-	-	-	40	-	-
Sodium Bromate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Bromide	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Carbonate	-	(R14)	all	NR	NR	NR	25	25	70	70	80	80	65
Sodium Carbonate/ Sodium Bicarbonate	-	(R14)	20/15	-	-	-	-	-	-	-	80	80	65
Sodium Chlorate	-	-	> 0,5	40	50	50	70	75	95	100	100	100	100
Sodium Chlorate/ Phosphoric Acid	-	(R3)	1-20/1-20	-	-	-	-	-	-	-	-	-	-
Sodium Chlorate/ Sodium Chloride	-	-	34/20	-	-	-	-	-	-	-	100	100	100
Sodium Chlorate/ Sulfuric Acid	-	(R3)	1-20/1-20	-	-	-	-	-	-	-	-	-	-
Sodium Chloride	-	-	> 0,5	40	50	50	70	75	95	100	100	100	100
Sodium Chloride (saturated solution)	see Brine, Salt	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Chloride (with Chlorine)	see Chlorinated Brine	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Chloride/ Ethyl Vanillin	-	-	0,1-25/1	-	-	-	-	-	-	-	50	-	-
Sodium Chloride/ Magnesium Oxide/ Lime	-	-	0,5-26/0,1-20/0,1-10	-	-	-	-	-	-	-	100	100	100
Sodium Chloride/ Sodium Chlorate	-	-	20/34	-	-	-	-	-	-	-	100	100	100
Sodium Chloride/ Sodium Hydroxide	-	(R8,14)	0,5-10/ 0,1-2	-	-	-	-	-	-	-	80	80	40
Sodium Chlorite, pH < 6	see Chlorine Dioxide	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Chlorite, pH > 6	-	(R13)	all	-	-	-	-	-	-	-	80	80	80
Sodium Chlorite/ Sodium Hypochlorite, pH > 11	-	(R8,11,16)	0,1-25/ 0,1-15	-	-	-	-	-	-	-	40	40	40
Sodium Chromate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Sodium Cyanide	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Dichromate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Diphosphate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Dodecylbenzene Sulfonate	-	-	all	-	-	-	-	-	-	-	70	70	70
Sodium Ferricyanide	-	-	> 0,5	35	50	45	70	70	95	100	100	100	100
Sodium Ferrocyanide	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Fluoride	-	-	all	-	-	-	-	-	-	-	80	80	80
Sodium Fluoroborate	-	(R14)	> 0,5	-	-	-	-	-	-	-	95	-	95
Sodium Fluorosilicate	-	(R14)	all	-	-	-	-	-	-	-	50	50	50
Sodium Gluconate	-	-	> 0,5	-	-	-	-	-	-	-	80	95	100
Sodium Glycolate	-	-	> 0,5	-	-	-	-	-	-	-	80	80	100
Sodium Hexametaphosphate	-	-	all	-	-	-	-	-	-	-	80	80	80
Sodium Hydrosulfide (Bisulfide)	see Sodium Bisulfide	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Hydrosulfite	-	-	all	-	-	-	-	-	-	-	40	40	40
Sodium Hydroxide	-	(R8,14)	all	NR	NR	NR	NR	55	70	60	80	80	40
Sodium Hydroxide with Sodium Compounds mix.	NaOH/ NaCl/ Na_2SO_4/ NaClO (active Chlorine)	(R8,11,13,16)	20/15/8/15	-	-	-	-	-	-	-	80	80	40
Sodium Hydroxide/ Organics	within sol. limits, i.e. no phase seprt. or coalescence	-	8/ trace	-	-	-	-	-	-	-	80	-	-
Sodium Hydroxide/ Sodium Bisulfite	-	(R8,14)	all	-	-	-	-	-	-	-	80	80	40
Sodium Hydroxide/ Sodium Hypochlorite	(Active Chlorine)	(R8,14)	0-20/0-0,1	-	-	-	-	-	-	-	80	-	-
Sodium Hypochlorite	(Active Chlorine), pH > 11	(R8,11,13,16)	0,5-5,25	NR	NR	NR	NR	NR	NR	50	65	80	40
Sodium Hypochlorite	(Active Chlorine), pH > 12	(R8,9,11,13,16)	5,25-18	-	-	-	-	-	-	-	65	65	-
Sodium Hypochlorite	(Active Chlorine), pH > 13	(R8,9,11,13,16)	18-21	-	-	-	-	-	-	-	-	40	-
Sodium Hypochlorite	(Active Chlorine), pH > 14	(R8,9,11,13,16)	21-25	-	-	-	-	-	-	-	-	40	-
Sodium Lauryl Sulfate	-	-	all	-	-	-	-	-	-	-	70	70	70
Sodium Metabisulfite	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Methyldithiocarbamate	-	-	all	-	-	-	-	-	-	-	80	80	80
Sodium Monophosphate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Myristyl Sulfate	-	-	all	-	-	-	-	-	-	-	70	70	70
Sodium Nitrate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Nitrite	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Oxalate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Perchlorate	-	-	60	-	-	-	-	-	-	-	40	40	40
Sodium Persulfate	-	-	all	-	-	-	-	-	-	-	100	100	100
Sodium Phosphate, mono-, di-, tribasic	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Polyacrylate	-	-	all	-	-	-	-	-	-	-	80	80	80
Sodium salt o-phenylphenate (Antimicrobial)	-	-	all	-	-	-	-	-	-	-	50	50	50
Sodium Salts of Carbamate Derivatives ref F21	-	-	0,1-15/0,1-15	-	-	-	-	-	-	-	40	40	50
Sodium Sarcosinate	-	-	40	-	-	-	-	-	-	-	50	50	50
Sodium Silicate	-	(R14)	> 0,5	-	-	-	-	-	-	-	80	80	65
Sodium Sulfate	-	-	> 0,5	40	50	45	70	75	95	100	100	100	100
Sodium Sulfate/ Sodium Sulfite	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Hydrosulfide		-	-	-	-	-	-	-	-	-	-	-	-
Sodium Sulfide	-	-	> 0,5	40	50	50	70	75	95	100	100	100	100
Sodium Sulfite	-	-	> 0,5	45	50	50	70	75	95	100	100	100	100
Sodium Sulphite/ Sodium Hydroxide/ Toluene	-	-	22/10/5	-	-	-	-	-	-	-	25	25	40

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Sodium Tartrate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Tetraborate	-	-	all	-	-	-	-	-	-	-	80	80	80
Sodium Thiocyanate	-	-	all	30	40	45	65	70	90	80	80	80	80
Sodium Thiosulfate	-	-	all	35	45	50	65	70	85	80	80	80	80
Sodium Tripolyphosphate	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sodium Xylene Sulfonate	-	-	all	-	-	-	-	-	-	-	70	70	70
Solder Plating Bath	see Plating Bath Chemicals	-	-	-	-	-	-	-	-	-	-	-	-
Solvent Extraction Soln. Type I ref F16	Solution Type I	-	-	-	-	-	-	-	-	-	80	80	80
Solvent Extraction Soln. Type II ref F17	Solution Type II	-	-	-	-	-	-	-	-	-	80	80	80
Sorbitol Solutions	-	-	all	-	-	-	-	-	-	-	70	70	80
Sour Crude Oil	see Crude Oil	-	-	-	-	-	-	-	-	-	-	-	-
Soy Oil	-	(R7)	100	-	-	-	-	-	-	-	100	100	100
Soy Sauce	-	(R7)	-	-	-	-	-	-	-	-	70	-	-
Spearmint Oil	-	(R7)	100	-	-	-	-	-	-	-	40	-	-
Stannic Chloride	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Stannous Chloride	-	-	> 0,5	40	50	50	70	70	95	100	100	100	100
Steam (dry, no condensation)	-	(R8)	-	-	-	-	-	-	-	-	100	100	105
Steam (wet, condensation)	-	(R8)	sat'd	-	-	-	-	-	-	-	80	80	80
Stearic Acid	-	-	all	35	45	45	65	75	90	100	100	100	100
Styrene	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	50
Styrene Acrylic Emulsion	-	-	all	-	-	-	-	-	-	-	50	50	50
Styrene-Butadiene Latex	-	-	all	-	-	-	-	-	-	-	60	60	60
Succinonitrile (aqueous)	-	-	all	-	-	-	-	-	-	-	25	25	40
Sugar Beet Liquor	-	(R7)	all	-	-	-	-	-	-	-	80	-	-
Sugar Cane Liquor and Sweetwater	-	(R7)	all	-	-	-	-	-	-	-	80	-	-
Sugar/ Sucrose	-	(R7)	all	-	-	-	-	-	-	-	100	-	-
Sulfamic Acid	-	-	0,5-10	-	-	-	-	-	-	-	100	100	100
Sulfamic Acid	-	-	11-15	-	-	-	-	-	-	-	80	80	80
Sulfamic Acid	-	-	16-25	-	-	-	-	-	-	-	65	65	65
Sulfamic/ Boric/ Glycolic Acid	-	-	0,5-25/0,5-30/0,5-10	-	-	-	-	-	-	-	65	65	65
Sulfanilic Acid, Meta	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
Sulfanilic Acid, Para	-	(R3,4)	> 0,5	-	-	-	-	-	-	-	100	100	100
Sulfate Process (noncondensable gases)	see Flue Gas	-	-	-	-	-	-	-	-	-	-	-	-
Sulfated Detergents	see Sulfonated Detergents	-	-	-	-	-	-	-	-	-	-	-	-
Sulfated Tall Oil Fatty Acid	see Tall Oil	-	-	-	-	-	-	-	-	-	-	-	-
Sulfides Scrubbing with Caustic	see Sodium Hydroxide	-	-	-	-	-	-	-	-	-	-	-	-
Sulfite/ Sulfate Liquors (Pulp Mill)	-	-	-	-	-	-	-	-	-	-	95	95	95
Sulfonated Detergents	-	-	100	35	45	45	65	70	90	90	70	70	80
Sulfur Chloride	-	-	vapor	-	-	-	-	-	-	-	95	95	95
Sulfur Chloride	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Sulfur Dioxide	see Flue Gas	-	-	-	-	-	-	-	-	-	-	-	-
Sulfur Molten (dry)	-	(R6)	100	-	-	-	-	-	-	-	-	-	150
Sulfur Trioxide (dry)	-	(R3)	vapor	-	-	-	-	-	-	-	-	-	-
Sulfur Trioxide (wet)	see Sulfuric Acid	(R3)	-	-	-	-	-	-	-	-	-	-	-
Sulfur Wettable, Fungicide	-	(R4)	all	-	-	-	-	-	-	-	80	80	80

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Sulfuric Acid	-	-	0,5-25	40	50	60	70	75	90	90	100	100	105
Sulfuric Acid	-	-	26-50	45	60	60	85	80	100	80	100	100	100
Sulfuric Acid	-	-	51-70	NR	NR	NR	65	70	70	80	80	80	80
Sulfuric Acid	-	(R5)	71-75	NR	NR	NR	NR	25	40	40	40	40	80
Sulfuric Acid	-	(R5)	> 80	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Sulfuric Acid	-	(R5,8)	76-80	NR	NR	NR	NR	25	40	40	40	40	50
Sulfuric Acid/ Ammonium Bifluoride	-	(R14)	0-75/0,1-3	-	-	-	-	-	-	-	40	40	65
Sulfuric Acid/ Chromic Acid Mixture	maximum total concentration 10%	-	-	-	-	-	-	-	-	-	50	50	65
Sulfuric Acid/ Copper Sulfate	-	-	0-25/1-35	-	-	-	-	-	-	-	100	100	100
Sulfuric Acid/ Copper Sulfate/ Sodium Persulfate/ EDTA	-	-	13/12/1/1	-	-	-	-	-	-	-	55	55	55
Sulfuric Acid/ H_2O_2/ $(NH_4)_2SO_4$/ Cu_2SO_4 ref F22	-	(R11)	10/5/5/5	-	-	-	-	-	-	-	40	40	40
Sulfuric Acid/ Hydriodic Acid	-	-	60/20	-	-	-	-	-	-	-	40	40	50
Sulfuric Acid/ Hydrochloric Acid	-	(R15,16,17)	50/15	-	-	-	-	-	-	-	40	40	50
Sulfuric Acid/ Hydrochloric Acid	-	(R16,18)	1-25/1-10	-	-	-	-	-	-	-	80	100	100
Sulfuric Acid/ Hydrofluoric Acid	-	(R8,14)	10/10	-	-	-	-	-	-	-	40	40	65
Sulfuric Acid/ Hydrofluoric Acid	-	(R8,14)	1-20/3-6	-	-	-	-	-	-	-	55	55	60
Sulfuric Acid/ Hydrofluoric Acid	-	-	30-35/3-5	-	-	-	-	-	-	-	LS	LS	LS
Sulfuric Acid/ Hydrofluoric Acid	-	(R8,14)	25/10	-	-	-	-	-	-	-	40	40	50
Sulfuric Acid/ Hydrogen Peroxide	-	(R11)	1-20/1-10	-	-	-	-	-	-	-	65	65	65
Sulfuric Acid/ Hydrogen Sulfide	-	-	1-50/0-10	-	-	-	-	-	-	-	100	100	100
Sulfuric Acid/ Inorganic Salts	-	-	0,5-20/0,5-50	-	-	-	-	-	-	-	100	100	100
Sulfuric Acid/ Inorganic Salts	-	-	21-50/0,5-20	-	-	-	-	-	-	-	80	80	80
Sulfuric Acid/ Methanol	-	-	30/5	-	-	-	-	-	-	-	-	-	50
Sulfuric Acid/ Nitric Acid	-	-	20/5	-	-	-	-	-	-	-	65	65	80
Sulfuric Acid/ Phosphoric Acid	-	-	0-25/0-25	-	-	-	-	-	-	-	80	80	80
Sulfuric Acid/ Sodium Chromate	-	(R3)	-	-	-	-	-	-	-	-	-	-	-
Sulfuric Acid/ Sodium Dichromate	see Sulfuric Acid/Chromic Acid Mixture	-	-	-	-	-	-	-	-	-	-	-	-
Sulfuric Acid/ Sulfate Salts	max. tot. concn. 80% (see Sulfuric Acid)	-	-	-	-	-	-	-	-	-	-	-	-
Sulfuric and oth. Acid mix. with Chlorinated Solvents	Sulfuric/ Hydrochloric/ Hydrofluoric / Phosphoric Acids/ Cl Solvents	-	40/20/5/35/1	-	-	-	-	-	-	-	NR	NR	LS
Sulfuric/ Hydrofluosilicic Acids/ MIBK	-	(R8,14)	25/10/2	-	-	-	-	-	-	-	LS	LS	50
Sulfuric/ Lactic Acids/ Sodium Sulfate	-	-	50/20/0-10	-	-	-	-	-	-	-	40	40	65
Sulfuric/ Nitric/ Phosphoric Acids	-	-	0-13/0-11/0-30	-	-	-	-	-	-	-	65	65	65
Sulfurous Acid	-	-	10	-	-	-	-	-	-	-	50	50	50
Superphosphoric Acid	(76% P_2O_5) see Phosphoric acid	-	105% H_3PO_4	-	-	-	-	-	-	-	-	-	-
Surfactant	-	(R3)	-	-	-	-	-	-	-	-	-	-	-
Surfactant (anionic)	see Anionic Surfactant	-	-	-	-	-	-	-	-	-	-	-	-
T	-	-	-	-	-	-	-	-	-	-	-	-	-
Tall Oil (reactor)	-	(R3)	-	-	-	-	-	-	-	-	100	100	105
Tall Oil (storage)	-	-	100	-	-	-	-	-	-	-	95	95	105
Tallow/ Sulfuric Acid	-	-	99/1	-	-	-	-	-	-	-	80	-	-
Tannic Acid	-	-	> 0,5	40	50	50	70	75	95	100	100	100	100
Tap Water (hard)	see Water (tap)	-	-	-	-	-	-	-	-	-	-	-	-
Tap Water (soft)	see Water (tap)	-	-	-	-	-	-	-	-	-	-	-	-
Tartaric Acid	-	-	> 0,5	-	-	-	-	-	-	-	100	100	100
tert-Butyl Methyl Ether	see Methyl tert-Butyl Ether	-	-	-	-	-	-	-	-	-	-	-	-

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Tetrabutyltin	-	-	100	-	-	-	-	-	-	-	50	50	50
Tetrachloroethane	-	-	100	-	-	-	-	-	-	-	40	40	55
Tetrachloroethylene (Perchloroethylene)	-	-	100	NR	NR	NR	NR	NR	NR	40	25	25	50
Tetrachloropyridine	-	-	100	-	-	-	-	-	-	-	25	25	50
Tetraethyl Orthosilicate	-	-	100	-	-	-	-	-	-	-	-	-	40
Tetrahydrofuran	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Tetrahydrofuran	-	-	0-5	NR	NR	NR	NR	NR	NR	25	40	40	50
Tetrahydrofuran	-	-	10-100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Tetramethyl Ammonium Hydroxide	-	(R14)	0-10	-	-	-	-	-	-	-	50	50	-
Tetra-n-Butylammonium Hydroxide	-	(R8,14)	40	-	-	-	-	-	-	-	40	40	-
Tetra-n-Butylphosphonium Hydroxide	-	(R8,14)	40	-	-	-	-	-	-	-	40	40	-
Tetrapotassium Pyrophospate	-	-	0-60	-	-	-	-	-	-	-	55	55	65
Tetrasodium Ethylenediaminetetraacetic Acid	Tetrasodium Salt of EDTA	-	all	-	-	-	-	-	-	-	80	80	65
Thioglycolic Acid	see Mercaptoacetic Acid	-	-	-	-	-	-	-	-	-	-	-	-
Thionyl Chloride	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Thiourea	-	-	0-50	-	-	-	-	-	-	-	65	65	65
Tin Fluoborate Plating Bath Solution ref F10	$Sn(BF_4)_2$, Sn, HBF_4, H_3BO_3	(R14)	-	-	-	-	-	-	-	-	100	100	100
Titanium Dioxide	-	-	all	-	-	-	-	-	-	-	80	80	80
Titanium Dioxide/ Sulfuric Acid	-	-	0-30/30	-	-	-	-	-	-	-	100	100	100
Titanium Tetrachloride	-	-	all	-	-	-	-	-	-	-	65	65	80
Tobias Acid (2-Naphthylamine-1-Sulfonic)	-	(R3)	100	-	-	-	-	-	-	-	100	100	100
Toluene	-	-	100	NR	NR	NR	NR	NR	30	NR	25	25	50
Toluene (vapor)	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Toluene Diisocyanate (TDI)	-	(R8)	100	-	-	-	-	-	-	-	NR	NR	30(R3)
Toluene Sulfonic Acid	-	(R3)	> 0,5	-	-	-	-	-	-	-	80	95	100
Toluidine (ortho-, para-, meta-)	-	-	100	-	-	-	-	-	-	-	NR	NR	20
Tomato Sauce	-	(R7)	all	-	-	-	-	-	-	-	90	-	-
Transformer Oils	Silicone and Mineral Oils	(R6)	100	-	-	-	-	-	-	-	100	110	150
Transformer Oils	Ester types	-	100	-	-	-	-	-	-	-	50	0	65
Tributyl Phosphate	-	-	100	-	-	-	-	-	-	-	50	50	60
Trichloroacetic Acid	-	-	85	-	-	-	-	-	-	-	25	25	50
Trichloroethane	-	-	100	NR	NR	NR	NR	NR	NR	40	40	40	50
Trichloroethylene	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Tricresyl Phosphate	-	-	100	-	-	-	-	-	-	-	70	70	70
Triethanolamine	-	-	100	-	-	-	-	-	-	-	50	50	65
Triethylamine	-	-	all	-	-	-	-	-	-	-	50	50	50
Triethylamine/ Triethylamine Hydrochloride/ HCl	-	-	50/20/5	-	-	-	-	-	-	-	50	50	50
Triethylene Glycol	see Ethylene Glycol	-	-	-	-	-	-	-	-	-	-	-	-
Trifluoroacetic Acid	see Chloroacetic Acid	-	-	-	-	-	-	-	-	-	-	-	-
Trimethyl Ammonium Chloride	Trimethylamine HCl, TMA-HCl	-	70	-	-	-	-	-	-	-	40	40	50(R12)
Trimethyl Benzene	-	-	100	-	-	-	-	-	-	-	25	25	50
Trimethylamine	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Trimethylamine	-	-	20	-	-	-	-	-	-	-	40	40	50
Trimethylamine	-	-	100	-	-	-	-	-	-	-	25	25	40
Trimethylene Chlorobromide	-	-	-	-	-	-	-	-	-	-	NR	NR	40

Chemical Environment			Concn.	Polipol Polyester Resins						Polives Vinyl Ester			
				3401 Ortho	351 Ortho	3872 ISO	3801 ISO	381 ISO NPG	391 BPA	701 BPA Epoxy	711 BPA Epoxy	710 BPA Epoxy	721 Novolac Epoxy
			%	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
Trioctyl Phosphine Oxide/ DEHPA/ Kerosene	Di-2-Ethylhexyl Phosphoric Acid	-	4/4/92	-	-	-	-	-	-	-	80	80	80
Trioctylphosphate	-	-	100	-	-	-	-	-	-	-	70	70	80
Tripropylene Glycol	see Ethylene Glycol	-	-	-	-	-	-	-	-	-	-	-	-
Trisodium Phosphate	-	-	sat'd	-	-	-	-	-	-	-	100	100	120
Turpentine	-	-	100	-	-	-	-	-	-	-	65	65	100
U	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium Extraction	see Kerosene	-	-	-	-	-	-	-	-	-	-	-	-
Urea	-	-	all	-	-	-	45	65	90	65	70	70	70
Urea Formaldehyde Resin	-	-	all	-	-	-	-	-	-	-	40	40	50
Urea/ Ammonium Nitrate/ Water	-	-	35/44/20	-	-	-	-	-	-	-	65	65	65
Urine	see Urea	-	-	-	-	-	-	-	-	-	-	-	-
V	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanillin Black Liquor	-	(R7)	-	-	-	-	-	-	-	-	50	-	-
Vegetable Oil	-	(R7)	100	-	40	50	50	80	-	95	95	95	95
Vinegar	-	(R7)	100	-	-	-	-	-	-	-	100	100	100
Vinyl Acetate	-	-	20	NR	NR	NR	NR	NR	NR	NR	40	40	40
Vinyl Acetate	-	-	100	NR	NR	NR	NR	NR	NR	NR	NR	NR	LS
Vinyl Chloride	-	(R20)	all	-	-	-	-	-	-	-	-	80	80
Vinyl Chloride	-	-	100	-	-	-	-	-	-	-	NR	NR	LS
Vinyl Toluene	-	-	100	-	-	-	-	-	-	-	25	25	50
W	-	-	-	-	-	-	-	-	-	-	-	-	-
Water (deionized)	-	(R8)	100	35	45	45	65	75	90	80	80	80	80
Water (demineralized)	-	(R8)	100	35	45	45	65	75	90	80	80	80	80
Water (distilled)	-	(R8)	100	35	45	45	65	75	90	80	80	80	80
Water (sea desalination)	-	(R8)	all	-	-	-	-	-	-	-	80	80	80
Water (sea)	-	(R8)	-	40	45	50	70	75	95	100	100	100	100
Water (steam condensate)	see Steam wet	(R8)	-	-	-	-	-	-	-	-	-	-	-
Water (tap/ hard)	-	(R7,8)	100	-	-	-	-	-	-	-	100	100	100
Water (tap/ soft)	-	(R7,8)	100	-	-	-	-	-	-	-	80	80	80
Water Vapor (exhaust)	see Flue Gas	(R20)	-	-	-	-	-	-	-	-	-	-	-
Water Vapor (wet)	see Steam wet	(R8)	-	-	-	-	-	-	-	-	-	-	-
Water, Phenol	see Phenol	-	-	-	-	-	-	-	-	-	-	-	-
Whey	-	(R7)	all	-	-	-	-	-	-	-	65	-	-
White Liquor (Pulp Mill)	-	(R8,14)	all	-	-	-	-	-	-	-	80	80	40
X	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene	-	(R20)	vapor	-	-	-	-	-	-	-	-	80	80
Xylene	-	-	100	NR	30	NR	25	NR	25	25	25	25	50
Z	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc Chloride	-	-	sat'd	40	50	50	70	75	95	100	100	100	120
Zinc Cyanide Plating Bath ref F8	Zn, NaCN, NaOH	(R8,14)	-	-	-	-	-	-	25	-	80	80	40
Zinc Electrolyte	Zinc Sulfate 35g/l Sulfuric Acid (see Sulfuric Acid)	-	-	-	-	-	-	-	-	-	-	-	-
Zinc Fluoborate Plating Bath Solution ref F7	$Zn(BF_4)_2$, NH_4Cl, NH_4BF_4	(R14)	-	-	-	-	-	-	-	-	95	95	95
Zinc Nitrate	-	-	sat'd	-	-	-	-	-	-	-	100	100	120
Zinc Phosphate (slurry)	-	-	> 0,5	-	-	-	-	-	-	-	80	80	80
Zinc Sulfate	-	-	sat'd	50	50	50	70	75	95	100	100	100	120

Common Standards for GRP Construction

There are various industry standards referring to the design, corrosion information and construction of GRP vessels.

AD-Merkblatt N1	Druckbehalter aus Textilglassverstarkten duroplastischen Kunststoffen (GFK)
ASME B31.3	Chemical Plants and Petroleum Refinery Piping
ASME Section X	Pressure Vessel Code - Fiberglass-reinforced Plastic Pressure Vessels
ASTM D 2563-87	Classifying Visual Defects in Glass Reinforced Plastic Laminate Vessels
ASTM D 3299-81	Filament Wound Glass Fiber Reinforced Thermoset Resin Chemical Resistant Tanks
BS 4994-1987	Design and Construction of Vessels and Tanks in Reinforced Plastics
BS 6464-1984	Reinforced Plastics Pipes, Fittings and Joints for Process Plants
BS 6374-1984	Linings of Equipment with Polymeric Meterials for the Process Industries Part 4
BS 7159-1989	Design and Contruction of Glass Reinforced Plastics (GRP) Piping Systems for Individual Plants or Sites
DIN 16965	Rohre aus glasfaserverstärkten Polysterharzen UP-GF)
DIN 16966	Formstücke und Verbindungen aus glasfaserverstärkten Polysterharzen (UP-GF)
DIN 18820	Reduction Factors for Long-Term Loads in Chemical Environments
EN 976-1997	Underground Tanks of Glass-Reinforced Plastics (GRP) Horizontal Cylindrical Tanks for the Non-pressure Storage of Liquid Petroleum Based Fuels. Part 1 - Requirements and Test Methods for Single wall Tanks. Part 2 - Transport, Handling, Storage and Installation of Single Wall Tanks.
EN 977-1997	Underground Tanks of Glass-Reinforced Plastics (GRP). Method for One Side Exposure to Fluids
EN 14364-2006	Plastics Piping Systems for Drainage and Sewage With or Without Pressure. Glass Reinforced Plastics Based on Unsaturated Polyester Resin (UP). Specifications fo Pipes. Fittings and Joints
EN 13121-2003	GRP tanks and vessels for above ground. Part - 1 Raw Materials - Specifications and Acceptance Conditions. Part - 2 Composite Materials - Chemical Resistance. Part - 3 Design and Workmanship. Part - 4 Delivery. Installation and Maintenance
NS 1545-1993	Horizontal Cylindrical Glass Fibre Reinforced Polyester. Petroleum Storage Tanks.
PLN 83	Plastkarlsnormer 1983
PRN 88	Plastrorledningsnormer 1988
NORSOK M-621	GRP Piping Materials
UKOOA-94	Specification and Recommended Practice for the Use of GRP Piping Offshore

Complete Chemical Formulas

F2 23% Potassium Ferrocyanide with Potassium Gold Cyanide and Sodium Cyanide

F3 4% Silver, 7% Potassium, 5% Sodium Cyanides, 2% Potassium Carbonate

F4 45% Copper (II) tetrafluoroborate; 19% Copper Sulfate; 8% Sulfonic

F5 10,5% Copper, 14% Sodium Cyanides, 6% Rochelle Salts

F6 Copper Chloride, Ammonium Chloride, Ammonium Hydroxide

F7 49% Zinc Fluoborate, 5% Ammonium Chloride, 6% Ammonium Fluoborate

F8 9% Zinc, 4% Sodium Cyanides, 9% Sodium Hydroxide

F9 3% Cadmium Oxide, 10% Sodium Cyanide, 1,2% Sodium Hydroxide

F10 18% Stannous Fluoborate, 7% Tin, 9% Fluoboric Acid, 2% Boric Acid

F11 44% Nickel Sulfate, 4% Ammonium Chloride, 4% Boric Acid

F12 15% Nickel Sulfate, 5% Nickel Chloride, 3% Boric Acid

F13 11% Nickel Sulfate, 2% Nickel Chloride, 1% Boric Acid

F14 45% Iron(II) Chloride, 15% Calcium Chloride; 20% Iron (II) Sulfate; 11% Ammonium Sulfate

F15 3% Copper, 1% Zinc, 5,6% Sodium Cyanides, 3% Sodium Carbonate

F16 3% Isodecanol, %6 Tri- C8- C10 alkyl amines, 91% kerosene

F17 4% Trioctylphosphine Oxide, 4% Di 2-Ethylhexyl Phosphoric Acid, 92% Kerosene

F18 0,4% Magnesium Sulfate, 9,5% Sodium Chloride, 5,0% Sodium Sulfate, 2,0% Potassium sulfate, 7% Gypsum, 3% Sodium Sulfide Nonahydrate, pH:7

F19 Potassium Hypochlorite, Potassium Hydroxide, Potassium Metasilicate

F20 Potassium Carbonate, Boric Acid, Potassium Metavanadate

F21 Sodium Dimethyldithiocarbamate, Disodium Ethylene Bisdithiocarbamate

F22 Sulfuric Acid, Hydrogen Peroxide, Ammonium Sulfate, Copper Sulfate

CAS No.	Chemical Name
10-54-3	Hexane
100-37-8	Diethylaminoethanol
100-41-4	Ethylbenzene
100-42-5	Styrene
100-44-7	Benzyl Chloride
100-51-6	Benzyl Alcohol
100-52-7	Benzaldehyde
100-97-0	Hexamethylenetetramine
101-2-0	Triphenyl Phosphite
101-68-8	Diphenylmethane-4,4-Diisocyanate (MDI)
101-84-8	Diphenyl Oxide
102-71-6	Triethanolamine
104-15-4	Toluenesulfonic Acid
104-74-5	Lauryl Pyridinium Chloride
104-76-7	Isooctyl Alcohol
105-58-8	Diethyl Carbonate
105-60-2	Caprolactam
106-43-4	Chlorotoluene (p-)
106-46-7	Dichlorobenzene (p-)
106-49-0	Toluidine (p-)
106-88-7	Butylene Oxide (1,2-)
106-89-8	Epichlorohydrin
106-93-4	Ethylene Dibromide
106-94-5	Propyl Bromide
106-97-8	Butane
106-99-0	Butadiene
107-13-1	Acrylonitrile
107-15-3	Ethylene Diamine
107-18-6	Allyl Alcohol
107-21-1	Ethylene Glycol
107-22-2	Glyoxal
107-2-8	Acrolein (Acrylaldehyde)
107-39-1	Diisobutylene
107-5-1	Allyl Chloride
107-6-2	Dichloroethane
107-7-3	Ethylene Chlorohydrin
107-92-6	Butyric Acid
107-96-0	Mercaptopropionic (3-) Acid
107-98-2	1-Methoxy-2-Propanol
108-1-0	Dimethylethanolamine
108-24-7	Acetic Anhydride
108-31-6	Maleic Anhydride
108-44-1	Toluidine (m-)
108-46-3	Resorcinol
108-5-4	Vinyl Acetate
108-65-6	Propylene Glycol Methyl Ether Acetate
108-77-0	Cyanuric Chloride
108-80-5	Cyanuric Acid
108-83-8	Diisobutyl Ketone
108-88-3	Toluene
108-90-7	Chlorobenzene
108-90-7	Monochlorobenzene
108-91-8	Cyclohexylamine
108-94-1	Cyclohexanone
108-95-2	Phenol
109-43-3	Dibutyl Sebacate
109-60-4	Propyl Acetate
109-64-8	Dibromopropane
109-69-3	Butyl Chloride
109-70-6	Trimethylene Chlorobromide
109-73-9	Butyl Amine
109-89-7	Diethylamine
109-99-9	Tetrahydrofuran THF
110-16-7	Maleic Acid
110-27-0	Isopropyl Myristate
110-61-2	Succinonitrile
110-82-7	Cyclohexane
110-86-1	Pyridine
110-91-8	Morpholine
110-94-1	Glutaric Acid
111-30-8	Glutaraldehyde
111-40-0	Diethylenetriamine
111-42-2	Diethanolamine
111-46-6	Diethylene Glycol
111-76-2	2-Butoxyethanol
111-77-3	Diethylene Glycol Methyl Ether
111-90-0	Diethylene Glycol Monoethyl Ether
111-96-6	Diethylene Glycol Dimethylether
112-16-3	Lauroyl Chloride
112-18-5	Dodecyldimethylamine
112-27-6	Triethylene Glycol
112-30-1	Decanol
112-34-5	Diethylene Glycol Butyl Ether
112-40-3	Dodecane
112-41-4	Dodecene
112-52-7	Lauryl Chloride
112-53-8	Dodecanol (Lauryl Alcohol)
112-53-8	Lauryl Alcohol
112-55-0	Dodecylmercaptan
112-55-0	Lauryl Mercaptan

CAS No.	Chemical Name
112-73-2	Diethylene Glycol dibutyl Ether
112-80-1	Oleic Acid
117-81-7	Dioctyl Phthalate
120-51-4	Benzyl Benzoate
121-3-9	Nitrotoluene (4-) Sulfonic Acid (2-)
121-43-7	Trimethyl Borate in Methyl Alcohol
121-44-8	Triethylamine
121-47-1	Sulfanilic Acid (meta)
121-57-3	Sulfanilic Acid (para)
121-69-7	Dimethylaniline (N,N)
123-42-2	Diacetone Alcohol
123-51-3	Isoamyl Alcohol
123-72-8	Butyraldehyde
123-76-2	Levulinic Acid (4-oxopentanoic acid)
123-86-4	Butyl Acetate
123-91-1	Dioxane
123-95-5	Butyl Stearate
123-99-9	Azelaic Acid
124-38-9	Carbon Dioxide
124-40-3	Dimethyl Amine
124-4-9	Adipic Acid
124-64-1	THPC
124-7-2	Caprylic Acid (Octanoic Acid)
124-7-2	Octanoic Acid
126-11-4	Nitromethane (tris, hydroxymethyl)
126-30-7	Neopentyl Glycol
126-72-7	Dibromopropyl Phosphate
126-73-8	Tributyl Phosphate
127-18-4	Perchloroethylene
127-18-4	Tetrachloroethylene (Perchloroethylene)
127-19-5	Dimethyl Acetamide
127-20-8	Dalapon-Sodium
127-9-3	Sodium Acetate
128-4-1	Sodium Dimethyldithiocarbamate
131-11-3	Dimethyl Phthalate
131-17-9	Diallylphthalate
132-27-4	DCS (Antimicrobial)
136-60-7	Butyl Benzoate
137-42-8	Sodium Methyldithiocarbamate
140-1-2	DTPA acid, Sodium salt
140-31-8	Aminoethyl Piperazine
140-88-5	Ethyl Acrylate
141-32-2	Butyl Acrylate
141-43-5	Ethanolamine
141-78-6	Ethyl Acetate
141-91-3	Dimethyl Morpholine (2,6-)
141-97-9	Ethyl Acetoacetate
142-4-1	Aniline Hydrochloride
142-62-1	Caproic Acid (Hexanoic Acid)
142-62-1	Hexanoic Acid
142-82-5	Heptane, n-
142-91-6	Isopropyl Palmitate
142-96-1	Dibutyl Ether (-n)
143-33-9	Sodium Cyanide
143-7-7	Lauric Acid
144-55-8	Sodium Bicarbonate
144-62-7	Oxalic Acid
149-91-7	Gallic Acid
151-21-3	Sodium Lauryl Sulfate
151-50-8	Potassium Cyanide
1066-33-7	Ammonium Bicarbonate
1071-83-6	Glyphosate
1113-38-8	Ammonium Oxalate
1191-50-0	Sodium Myristyl Sulfate
1300-21-6	Dichloroethane
1300-72-7	Sodium Xylene Sulfonate
1302-42-7	Sodium Aluminate
1303-96-4	Borax
1305-62-0	Calcium Hydroxide
1309-42-8	Magnesium Hydroxide
1310-58-3	Potassium Hydroxide
1310-65-2	Lithium Hydroxide
1310-73-2	Sodium Hydroxide
1312-76-1	Potassium Metasilicate
1313-82-2	Sodium Sulfide
1314-56-3	Phosphorous Pentoxide
1314-85-8	Phosphorus Sesquisulfide
1317-65-3	Calcium Carbonate
1319-77-3	Cresylic Acid
1327-41-9	Aluminum Chlorohydrate
1327-52-2	Arsenic Acid
1327-53-3	Arsenious Acid
1330-20-7	Xylene
1330-43-4	Sodium Tetraborate
1330-78-5	Tricresyl Phosphate
1330-86-5	Isooctyl Adipate
1330-96-4	Sodium Borate
1333-39-7	Phenol Sulfonic Acid
1333-83-1	Sodium Bifluoride
1335-54-2	Diisopropanolamine

CAS No.	Chemical Name
1336-21-6	Ammonium Hydroxide
1341-49-7	Ammonium Bifluoride
1344-67-8	Copper Chloride
1344-9-8	Sodium Silicate
1461-25-2	Tetrabutyltin
1565-80-6	Amyl Alcohol
1634-4-4	Methyl t-Butyl Ether
1634-4-4	t-Butyl Methyl Ether (MTBE)
1762-95-4	Ammonium Thiocyanate
1863-63-4	Ammonium Benzoate
10025-67-9	Sulfur Chloride
10025-73-7	Chromic Chloride
10025-87-3	Phosphorus Oxychloride
10025-91-9	Antimony Trichloride
10026-4-7	Silicone Tetrachloride
10028-15-6	Ozone in solution
10034-85-2	Hydriodic Acid
10034-93-2	Hydrazine Sulfate
10035-10-6	Hydrobromic Acid or HBr
10039-54-0	Hydroxylamine Acid Sulfate
10043-1-3	Aluminum Sulfate
10043-35-3	Boric Acid
10043-52-4	Calcium Chloride
10043-67-1	Aluminum Potassium Sulfate
10049-4-4	Chlorine Dioxide
10099-74-8	Lead (II) Nitrate
10101-53-8	Chromic Sulfate
10108-64-2	Cadmium Chloride
10108-73-3	Cerous Nitrate
10112-91-1	Mercurous Chloride
10124-37-5	Calcium Nitrate
10137-74-3	Calcium Chlorate
10141-0-1	Chromium Potassium Sulfate
10141-5-6	Cobalt Nitrate (II)
10196-4-0	Ammonium Sulfite
10222-1-2	Dibromonitrilo-Propionamide
10257-55-3	Calcium Sulfite
10294-34-5	Boron Trichloride
10361-37-2	Barium Chloride
10377-48-7	Lithium Sulfate
10377-60-3	Magnesium Nitrate
10377-66-9	Manganese Nitrate (Manganous)
10421-48-4	Ferric Nitrate
10450-55-2	Ferric Acetate
10545-99-0	Sulfur Dichloride
10553-31-8	Barium Bromide
10588-1-9	Sodium Dichromate
11120-25-5	Ammonium Tungstate
12007-89-5	Ammonium Pentaborate
12021-95-3	Fluozirconic Acid
12028-48-7	Ammonium Metatungstate
12042-91-0	Aluminum Chlorohydroxide
12124-99-1	Ammonium Sulfide
12125-1-8	Ammonium Fluoride
12125-2-9	Ammonium Chloride
12259-92-6	Ammonium Polysulfide
12379-40-7	Imidazoline Acetate
12501-45-0	Ammonium Molybdate
13235-36-4	EDTA
13463-67-7	Titanium Dioxide
13473-90-0	Aluminum Nitrate
13478-10-10	Ferrous Chloride
13520-68-9	Ferrous Nitrate
13598-36-2	Phosphorous Acid, ortho-
13601-19-9	Sodium Ferrocyanide
13674-87-8	Dichloro-(2)-Propyl Phosphate
13746-66-2	Potassium Ferricyanide
13755-29-8	Sodium Fluoroborate
13770-89-3	Nickel Sulfamate
13774-25-9	Magnesium Bisulfite
13814-97-6	Tin Fluoborate
13826-88-5	Zinc Fluoborate
13840-33-0	Lithium Hypochlorite
13843-59-9	Ammonium Bromate
13846-18-9	Calcium Bisulfite
13943-58-3	Potassium Ferrocyanide
13967-50-5	Potassium Gold Cyanide
14216-75-2	Nickel Nitrate
14217-21-1	Sodium Ferricyanide
14518-69-5	Tetra-n-Butylphosphonium Hydroxide
15972-60-8	Alachlore, Herbicide
16529-56-9	2-Methyl-3-Butenenitrile
16672-87-0	Ethephon
16721-80-5	Sodium Bisulfide (Hydrosulfide)
16721-80-5	Sodium Hydrosulfide
16872-11-0	Fluoboric Acid
16893-85-9	Sodium Fluorosilicate
16940-66-2	Sodium Borohydride (aq. soln.)
16949-65-8	Magnesium Fluosilicate
16961-83-4	Fluosilicic Acid

CAS No.	Chemical Name
16961-83-4	Hydrofluosilicic Acid
17194-0-2	Barium Hydroxide
17439-11-1	Fluotitanic Acid
17496-8-1	Ammonium Propionate
18130-44-4	Titanium Sulfate
18483-17-5	Tannic Acid
19351-18-9	2,2-Dimethyl Thiazolidine
105839-17-6	Epoxidized Castor Oil
287-92-3	Cyclopentane
298-12-4	Glyoxylic Acid
298-14-6	Potassium Bicarbonate
298-7-7	DEHPA, HDEHPA
2008-39-1	2,4-D, Dimethylamine salt
2052-49-5	Tetra-n-Butylammonium Hydroxide
2082-81-7	Trimethylamine
2090-64-4	Carbonic acid
2235-54-3	Ammonium Lauryl Sulfate
2402-79-1	Tetrachloropyridine
2836-32-0	Sodium Glycolate
2971-90-6	Clopidol
21645-51-2	Aluminum Hydroxide
23210-56-2	Ifenprodil (insecticide emulsion)
24347-58-8	Butylene Glycol
24800-44-0	Tripropylene Glycol
25013-15-4	Vinyl Toluene
25154-55-6	Nitrophenol
25155-30-0	Sodium Dodecylbenzenesulfonate
25265-71-8	Dipropylene Glycol
25322-68-3	Polyethylene Glycol
25339-17-7	Isodecanol
25340-17-4	Diethylbenzene
25567-55-9	Sodium Tetrachlorophenate
25639-42-3	Methylcyclohexanol
26248-24-8	Sodium Tridecylbenzene Sulfonate
26968-58-1	Ethyl Benzyl Chloride
27138-31-4	Dipropylene Glycol Dibenzoate
27176-87-0	Dodecyl Benzene Sulfonic Acid
27458-94-2	Isononyl Alcohol
28348-53-0	Sodium Cumenesulfonate
28553-12-0	Diisonoyl Phthalate
29965-97-7	Cyclooctadiene
301-4-2	Lead (II) Acetate
302-1-2	Hydrazine
334-48-5	Capric Acid (Decanoic Acid)
334-48-5	Decanoic Acid
3012-65-5	Ammonium Citrate
3039-83-6	Ethylenesulfonic acid, sodium salt
3251-23-8	Copper Nitrate
3710-84-7	Diethyl Hydroxylamine
31142-56-0	Aluminum Citrate
34590-94-8	DPM Glycol Ether
35139-28-8	Ferric Sulfate
36653-82-4	Cetyl alcohol
36653-82-4	Hexadecanol (n-)
497-19-8	Sodium Carbonate
4316-73-8	Sodium Sarcosinate
50-0-0	Formaldehyde
50-21-5	Lactic Acid
50-70-4	Sorbitol Solutions
50-78-2	Acetylsalicylic Acid
56-23-5	Carbon Tetrachloride
56-81-5	Glycerin or Glycerol
56-93-9	Benzyltrimethylammonium Chloride
57-10-3	Palmitic Acid
57-11-4	Stearic Acid
57-13-6	Urea
57-50-1	Sugar Cane
57-55-6	Propylene Glycol
502-44-3	Caprolactone
506-59-2	Dimethylamine Hydrochloride
506-64-9	Silver Cyanide
507-40-4	Butyl Hypochlorite (tert-)
513-77-9	Barium Carbonate
526-83-0	Tartaric Acid
526-95-4	Glyconic Acid
527-7-1	Sodium Gluconate
532-32-1	Sodium Benzoate
540-54-5	Propyl Chloride
540-59-0	Dichloroethylene
540-72-7	Sodium Thiocyanate
540-82-9	Ethyl Sulfate
541-41-3	Ethyl Chloroformate
542-16-5	Aniline Sulfate
542-62-1	Barium Cyanide
542-75-6	Dichloropropene
543-59-9	Amyl Chloride
543-59-9	Chloropentane
543-80-6	Barium Acetate
544-63-8	Myristic Acid
544-92-3	Copper Cyanide